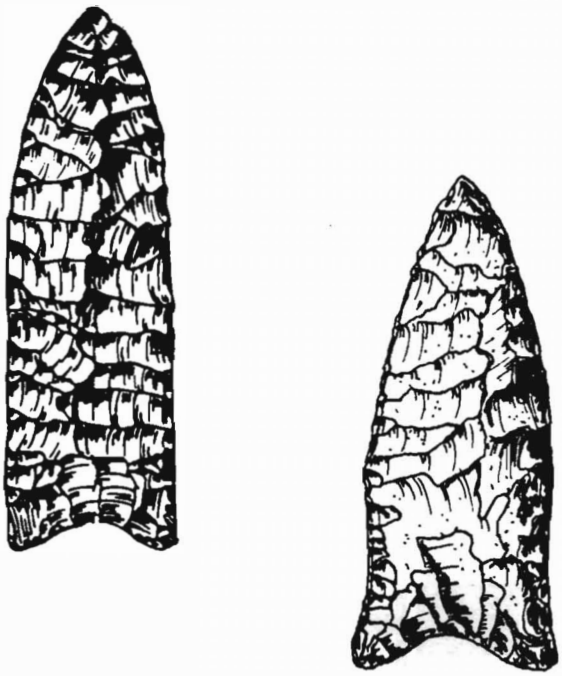
# JOURNAL OF THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION



# LA TIERRA

Volume 9
Number 3
1982

LA TIERRA

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Jimmy L. Mitchell
Editor

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EDITORIAL

PLEASE NOTE -

The "editorial office" of your journal has moved from Randolph AFB to 926 Toepperwein Road in Converse, Texas. Contrary to rumor, this move is not caused by retirement from the Air Force; that is still at least a couple of years away. Heidi wanted a studio where she could teach china painting and so we remodeled an older home on a high hill at the edge of Converse, just northeast of San Antonio. Looking out the front door, I can see the San Antonio skyline including the lights of the Tower of the Americas at night. Out the back, we look across several farms and Loop 1604 and can see the base, including the lights of the Taj at night. And, after twenty-one years of marriage and five kids, I finally have a study which is not in our bedroom but is a whole separate room! So now, *La Tierra* finally has an editorial office that's not a bedroom...

You will note from the cover of this issue that we are departing from the Spanish Missions theme which was begun in January 1980. While there are still a number of Spanish sites to be dealt with in this series, this issue is devoted to prehistoric rather than historic archaeology. In the future, issues will alternate between a continuation of the Spanish Historic Archaeology and Prehistoric Archaeology.

My apologies to the STAA membership for the lateness of this issue. I have had all the materials for this issue (and enough for the next issue as well) for some time. Unfortunately, with moving a household, painting remodeled rooms, laying carpet, etc. plus a full time military job and a part-time job teaching at UT Austin, something had to give. Things are starting to get settled down now, so perhaps we can get somewhat back on schedule. Again, my apologies for the delay in getting this issue to the printer.

The Editor

# CRITERIA FOR CLASSIFICATION OF *PLAINVIEW* AND *GOLONDRINA* PROJECTILE POINTS

Thomas C. Kelly

## ABSTRACT

A multiple discriminant analysis of Paleo-Indian points demonstrated the clear distinction of *Plainview* and *Golondrina* as separate point types. A manual method with numerical criteria is provided for the accurate classification of *Plainview* and *Golondrina* points without the use of the expensive computer programs which were invaluable in establishing these same criteria. An additional benefit is the separation of the contracting stem South Texas "*Angostura*" points from *Plainview* and *Golondrina* points. Technological and cultural implications are discussed.

## The *PLAINVIEW-GOLONDRINA* CLASSIFICATION PROBLEM

The problem became apparent (Kelly, 1976) in an attempt to classify a Paleo-Indian collection donated to the University of Texas at San Antonio by Brom Cooper (Kelly, 1982). The collection consisted mostly of widely varied basal fragments which initially defied classification. Dr. Joel Gunn introduced me to computer-assisted multivariate analysis and automatic projectile point classification (Gunn and Prewitt, 1975). It became apparent after several computer runs that the *Plainview* classification worked well but Johnson's (1964) "*Plainview*, golondrina variety" simply "did not compute."

## PROCEDURE

Computer program BMDO7M, Step Discriminant Analysis (Dixon, 1974), was chosen as the primary classification tool. It is designed to statistically distinguish between two or more groups. Discriminating variables are entered in order of their classifying power one step at a time with each variable's classifying power evaluated at each step. When variables cease to have classifying power, they can be dropped as redundant.* Projectile points will be automatically classified and each point plotted based on a summary statistic of all discriminating variables (a discriminant "score").

Brown (Whallon and Brown, 1982:183) cautions against some of the pitfalls of automatic classification in typology, and BMDO7M does force classification. However, points not belonging to the types under study are typically cast outside the type parameters in the discriminant score plots. SPSS Factor Analysis (Nie *et al*. 1975) was employed to cross check results, and in every case the two programs accepted and rejected the same projectile points. Benfer (1967) and others have used factor analysis for point classification.

## THE ATTRIBUTES

Nine attributes (measured or observed morphological traits) were selected that would hopefully differentiate between *Plainview* and *Golondrina* points based on the type definitions. Interval measurements (to the closest millimeter) were length, width, thickness, haft proximal width, haft distal width (arbitrarily measured 10 mm

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* [ Editor's Note: A "redundant" characteristic, in the sense of providing no additional discriminating information, can still be a defining characteristic for the type or for a class of types. As you will see in this study, general shape (length, thickness) and side smoothing are defining characteristics of Paleo-Indian points but are not discriminating in the sense of distinguishing between the two types.]

above the point base), depth of basal concavity, and length of the shortest ground edge (the closest indication of haft binding or enclosure). The subjective classifications were type of flaking and type of basal thinning. These measurements and their computer abbreviations are shown on type site points in Figure 1. The computer programs used accept the combined use of interval and nominal data.

## THE TYPE SITE POINTS

Knudson (1973) made detailed drawings of all the *Plainview* type site points in her doctoral dissertation (unfortunately, not widely enough distributed). They are photo-reproduced here at "real" scale (1 mm = 1 mm) with both sides shown only where attributes differ reverse to obverse (Figure 1A, Figure 2, Figure 3). The corresponding data table is Table 1.

*Golondrina* point data were secured from Johnson (1964:Figures 15 and 18) for the points used in establishing the classification. Eight of these have been photo-reproduced at true size. Figure 1B replicates Johnson's Figure 15D. The letters in Figure 4 correspond to those of Johnson's Figure 15.

A data table was made for these points (omitted here) and the data punched on IBM cards for the 14 *Plainview* and 14 *Golondrina* points. These type decks were then used to establish the parameters to properly classify the types. Unfortunately, the initial computer plot looked like Figure 7. The *Plainview* points fall into a neat, tight oval characteristic of a reasonably homogeneous population or type. (Knudson 1973:67, comments that the type site *Plainview* points could have been made by one or two individuals.) Tight production control is evident in this dimensional analysis. The plot of the so-called *Golondrina* points, however, forms such a large and irregular pattern that there is more variance within the group than there is difference between the *Plainview* and *Golondrina* group means. Several points are so widely displaced that they would not be classified as belonging to either population. These contradictions prompted a closer examination of the points and criteria Johnson used in establishing the *Golondrina* classification.

Johnson (1964:49) defined the *Plainview*, golondrina variety as: "characterized by an expansion of the edges in the middle of the blade and by out-flaring basal corners or ears resulting in a recurved edge. The *Golondrina* points also have a deeper basal concavity and cruder, more random flake scars than classic *Plainview* points. Basal and lateral smoothing occurs on both forms. Bases of *Plainview* points are thinned with several long, narrow flakes removed from the base parallel to the long axis of the points. On the *Golondrina* points, a single or small number of crescent-shaped flakes were usually removed from the base. Length ranges from 55 to 80 mm, basal width between 22 and 29 mm. Thickness varies from six to eight millimeters. Depth of basal concavity is from four to nine millimeters."

Accepting these criteria as defining classic *Golondrina* points, Johnson's (1964) and Sorrow's (1968:Figure 17) Devil's Mouth points were examined <u>strictly</u> against the criteria. The following points were rejected as <u>not</u> being *Golondrina* for the reasons given:

Johnson, 1964:

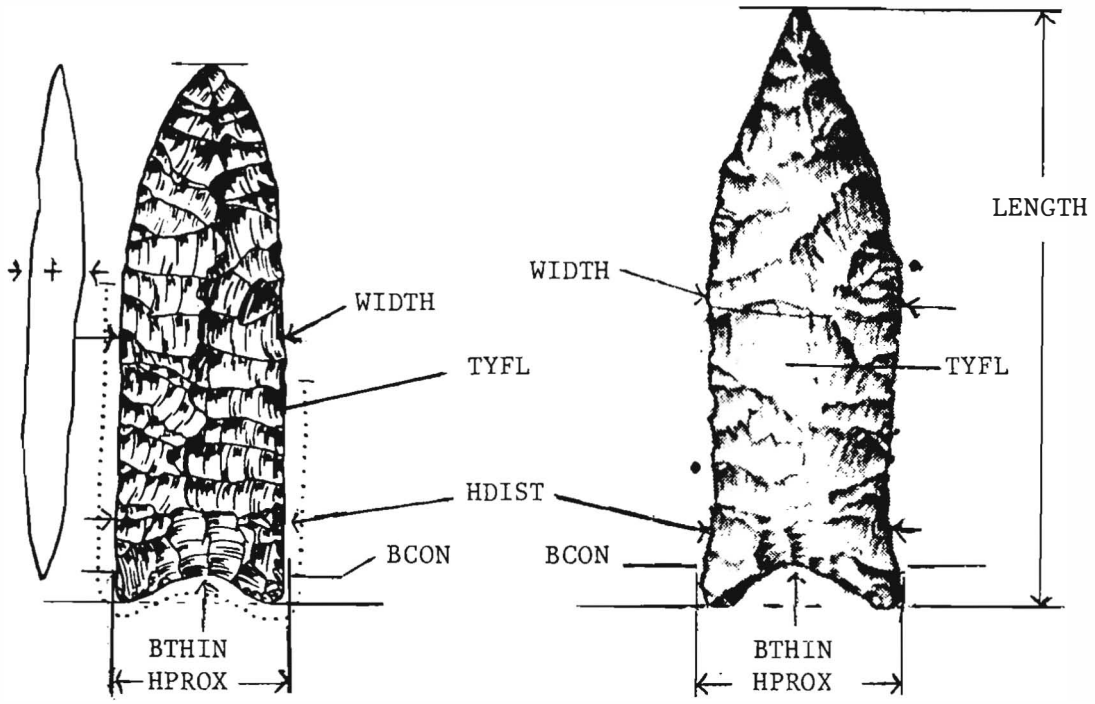
Figure 15

C. Point has contracting stem, no recurve, flute obliterates flaking. Badly damaged point.

F. Split basal fragment, not enough point to classify.

I. Width 33 mm, Haft Distal 30 mm, Haft Proximal 28 mm. A contracting stem point, no recurve.

J. Width 25 mm, Haft Distal 25 mm, Haft Proximal 25 mm. Point is parallel sided, no recurve.




KNUDSON, 1973:Fig. D8A

JOHNSON, 1964:Fig. 15D

A

0 5

B

CM

ATTRIBUTES MEASURED

| | | |
|---|---|---|
| LENGTH | | |
| THICKNESS | | |
| GRED | Length of shortest ground edge. | |
| BCON | Base concavity. | |
| WIDTH | Measure 20 mm above base on fragments, widest distal otherwise. | |
| HDIST | Haft distal width measured 10 mm above base. | |
| HPROX | Haft proximal width measure widest point on flared ears, at base otherwise. | |
| TYFL | 1 = Horizontal parallel | Type of Flaking |
| | 2 = Oblique (diagonal) parallel | |
| | 3 = Irregular | |
| BTHIN | 1 = Long thin parallel vertical flake scars | Type of Basal Thinning |
| | 2 = Short lunate or single large flake scars | |
| | 3 = irregular | |

All interval measurements to closest millimeter

Figure 1. *Plainview* and *Golondrina* Type Site Points and Attributes Measured.

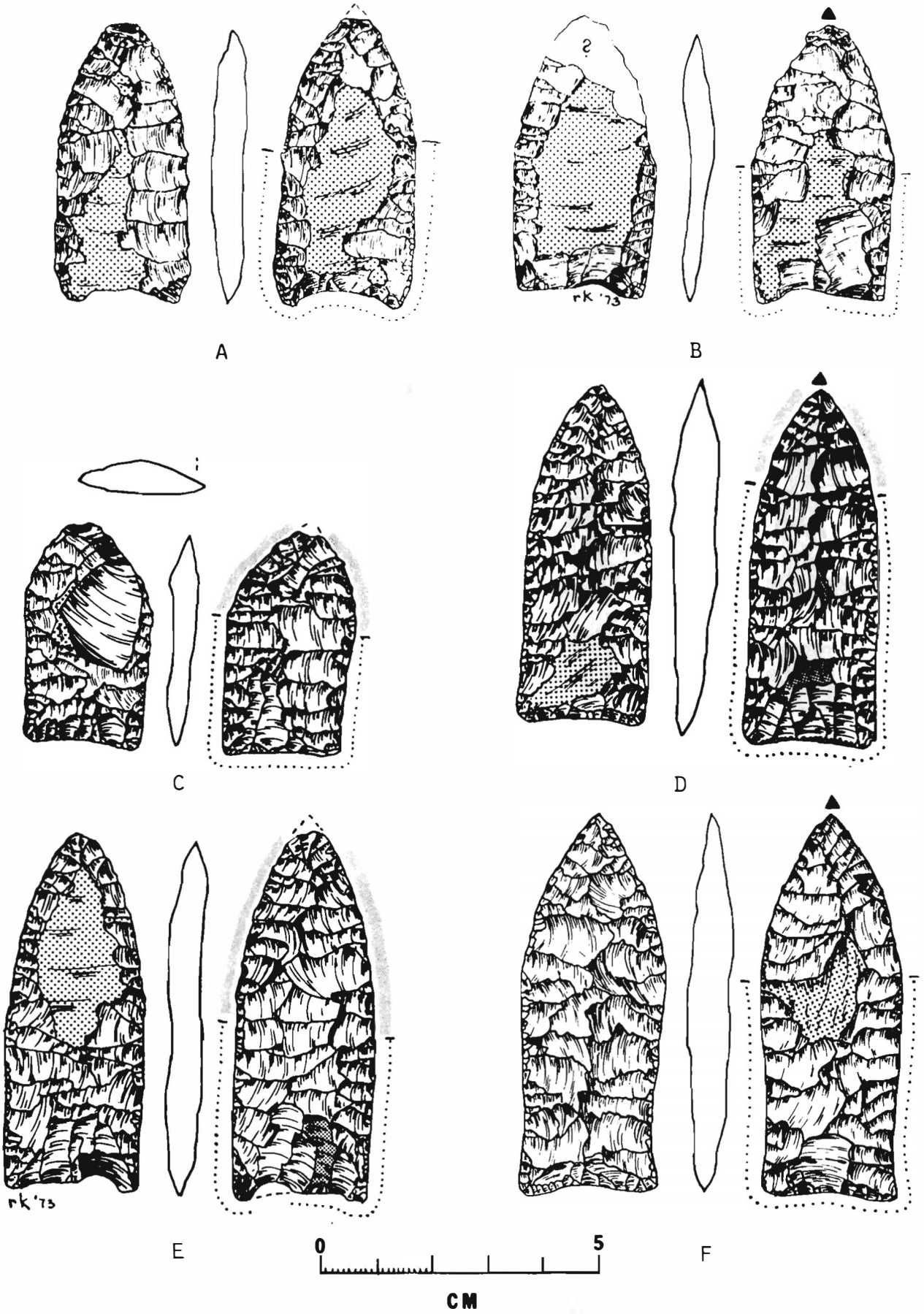



Figure 2. *Plainview* Type Site Points Courtesy of Ruthann Knudson. A, Knudson's D4A; B, D4B; C, D5F; D, D5A; E, D5D; F, D6D.

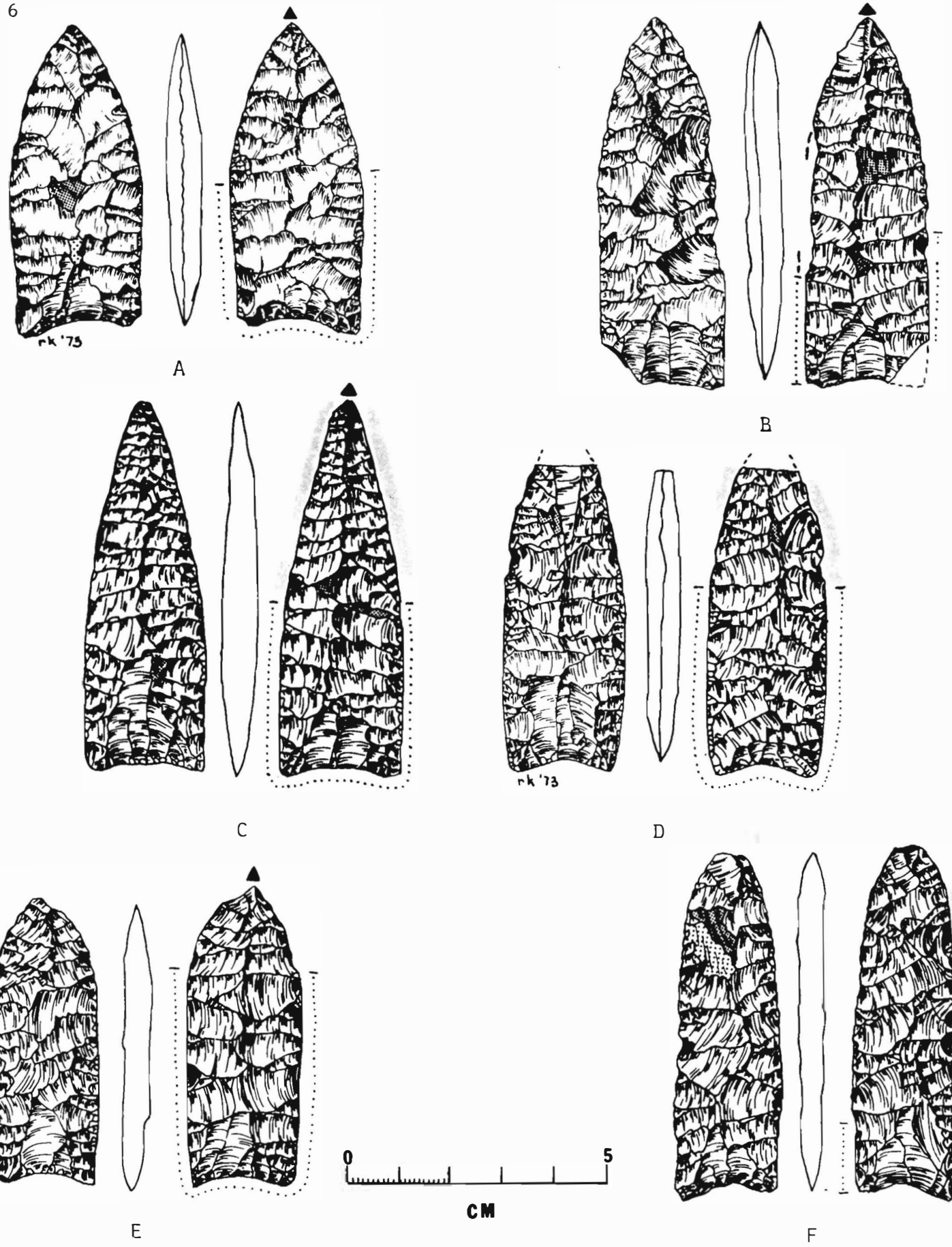



Figure 3. *Plainview* Type Site Points courtesy of Ruthann Knudson. A, Knudson's D6E; B, D7B; C, D7A; D, D7E; E, D8C; F, D8D.

Table 1. Data for *Plainview* Type Site Specimens

| Fig. | Knudson | Lgth. | Thick. | GRED | BCON | Width | HDIST | HPROX | TYFL | BTHIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 1A | D8A | 71 | 6 | 30 | 4 | 22 | 22 | 22 | 1 | 1 |
| 2A | D4A | 53 | 6 | 28 | 3 | 25 | 25 | 24 | 1 | 1 |
| 2B | D4B | 51 | 5 | 22 | 2 | 25 | 24 | 23 | 1 | 2 |
| 2C | D5F | () | 5 | 21 | 1 | 23 | 22 | 22 | 1 | 1 |
| 2D | D5A | 64 | 8 | 45 | 1 | 24 | 23 | 23 | 1 | 1 |
| 2E | D5D | 67 | 6 | 29 | 2 | 25 | 25 | 24 | 1 | 1 |
| 2F | D6D | 69 | 7 | 38 | 1 | 26 | 23 | 24 | 1 | 2 |
| 3A | D6E | 60 | 7 | 28 | 4 | 24 | 24 | 24 | 1 | 2 |
| 3B | D7D | 74 | 7 | 29 | 3 | 24 | 24 | 23 | 1 | 1 |
| 3C | D7A | 74 | 7 | 34 | 2 | 24 | 24 | 23 | 1 | 1 |
| 3D | D7E | () | 7 | 36 | 2 | 24 | 24 | 23 | 1 | 1 |
| 3E | D8C | 58 | 5 | 41 | 2 | 22 | 21 | 20 | 1 | 1 |
| 3F | D8D | 69 | 5 | 12* | 3 | 21 | 20 | 20 | 1 | 1 |
| 4D | D6C | () | 5 | () | 2 | 24 | 23 | 22 | 1 | 1 |
| Mean | | 65 | 6 | 32 | 2.3 | 23.7 | 23 | 22.6 | | |
| Maximum | | 74 | 8 | 45 | 4 | 26 | 25 | 24 | | |
| Minimum | | 51 | 5 | 21 | 1 | 21 | 20 | 20 | | |

* Thrown out because standard deviation too great to belong to same family.

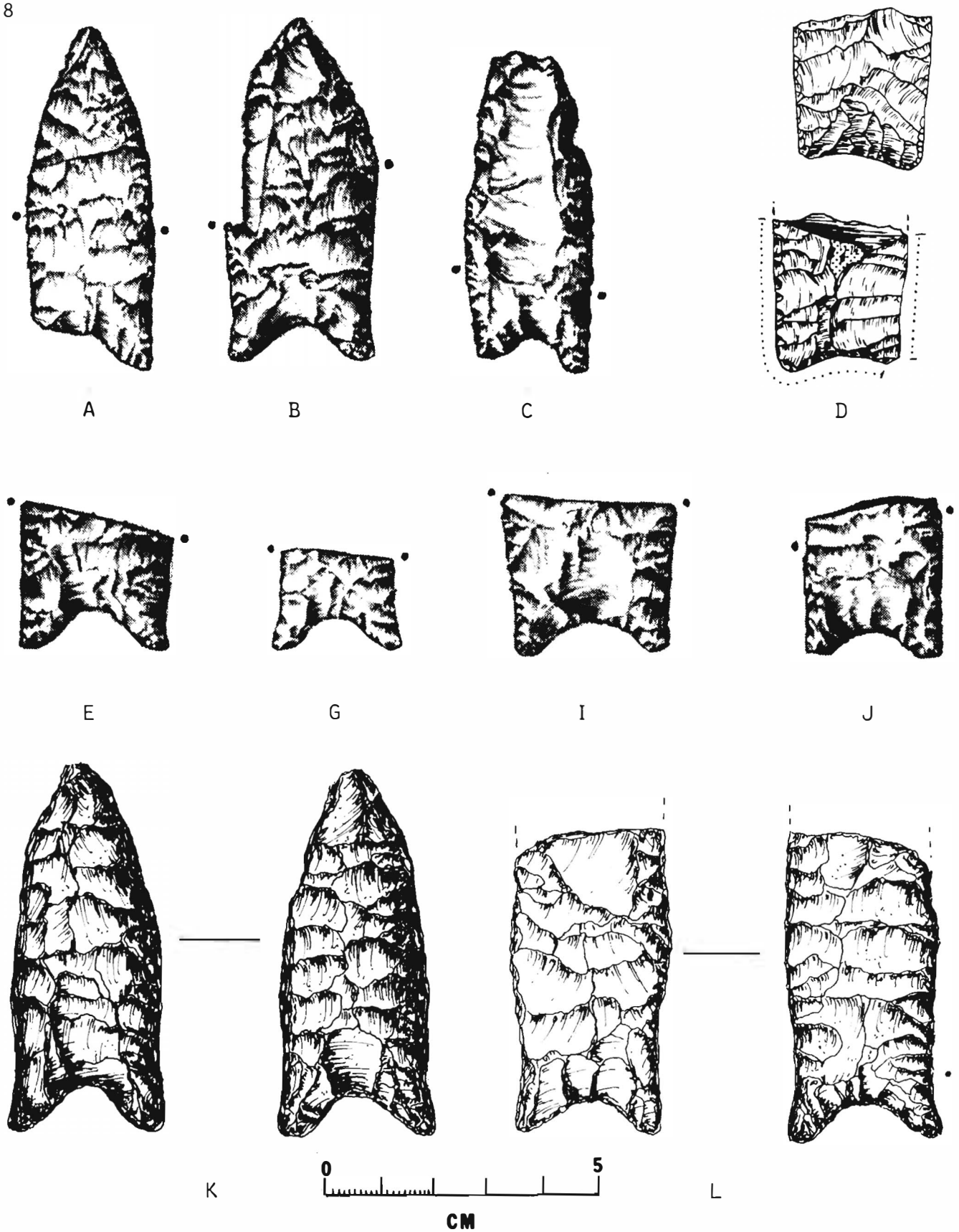



Figure 4. *Golondrina* and *Plainview* Points. A, B, C, E, G, I, J from Johnson, 1964: Fig. 15, labelled as in publication; D, Knudson's D6C. Upper has typical *Plainview* basal thinning while lower is thinned from sides like *Milnesand*; K, Witte Museum, Frederick Collection, Kendall County, Texas; L, Witte Museum, Pohl Collection, Williamson County, Texas.

Figure 18 Johnson's Figure 18 letters separated by an = indicating corresponding letters for same point in Epstein (1969:Figure 5)

I=A No basal grinding, base thinning is *Plainview*, 1 mm recurve could be either *Plainview* or *Golondrina*.

J=I No basal grinding, less than 1 mm recurve.

K=K No basal grinding. *Plainview* type base thinning. Less than 1 mm recurve.

Sorrow, 1968:
Figure 17 E. No basal grinding, rough work. Unfinished point?

F. Left edge has 1 mm recurve but the right edge is straight and contracting. Heavily reworked.

Epstein (1969:32) disagreed with Johnson's use of four points from the San Isidro site in establishing the *Golondrina* classification and labelled them *Plainview*. The points lack basal grinding, do not have the typical *Plainview* long, narrow vertical base thinning scars or collateral flaking. Some have the deep (defined as 4 mm or more) concave bases while others do not. Exotic material and functionally-unnecessary careful flaking, Knudson's (1973:61) elements of style found in type site *Plainview* points, are also missing. Those points with deep enough basal concavities still lack the recurve of *Golondrina*. They are not *Golondrina*, and if they are *Plainview*, they show cultural variance from the mental template of what *Plainview* points should be, possibly a function of separation in time, distance and in different life-styles. Epstein may better have called them "*San Isidro*" points.

My conclusions were that Johnson's choice of points to represent the *Golondrina* type did not accurately represent his description and were in fact members of more than one type.

Sorrow (1968), in discussing Devil's Mouth classification problems, stated that "Misidentification is a constant danger in classifying projectile points, and when the same name is applied to different objects, it leads to unwarranted correlations and, in general, to confusion." Krieger (1947:938), writing of an earlier classification problem, stated that its solution "...must depend on the discovery *in situ* of artifact series sufficiently large to define the distinctive types." A type, to be very useful, must be established on sufficient data to recognize its fellow population members and to exclude non-members.

Rather than broaden Johnson's definition to include all the points he labelled *Golondrina*, it would seem more logical to find enough complete points that fit the type description. The "lumpers" and "splitters" can later decide how many, if any, variants to include in the *Golondrina* classification. Fifteen points were selected that most nearly fit Johnson's type description and are shown with their sources (Figure 1B; Figure 4A, B, K, L; Figure 5A to F; and Figure 6E to H). Table 2 is the associated data table from which a new *Golondrina* card deck was punched. Succeeding discriminant analysis computer runs using the two type decks produced point plots (Figure 8) showing *Plainview* and *Golondrina* clearly as two distinct populations. Factor score plots from factor analysis and Sub-Program T-Test (Nie *et al.* 1975:267) also show that morphologically, *Plainview* and *Golondrina* are two significantly different types and the rubric "*Plainview*, golondrina variety" can be dropped in favor of the type name *Golondrina*.

Attribute data was then obtained from additional points to cross-validate the classification system (Brom Cooper collection, UTSA, TARL, Witte Museum, and individuals) and from publications (Hester 1968; Blaine, Harris, Crook and Shiner 1968; Word and Douglas 1970; papers in *La Tierra* 1974 to 1982, and others). To date, 42 *Plainview* and 41 *Golondrina* points have been classified with confidence and in strict

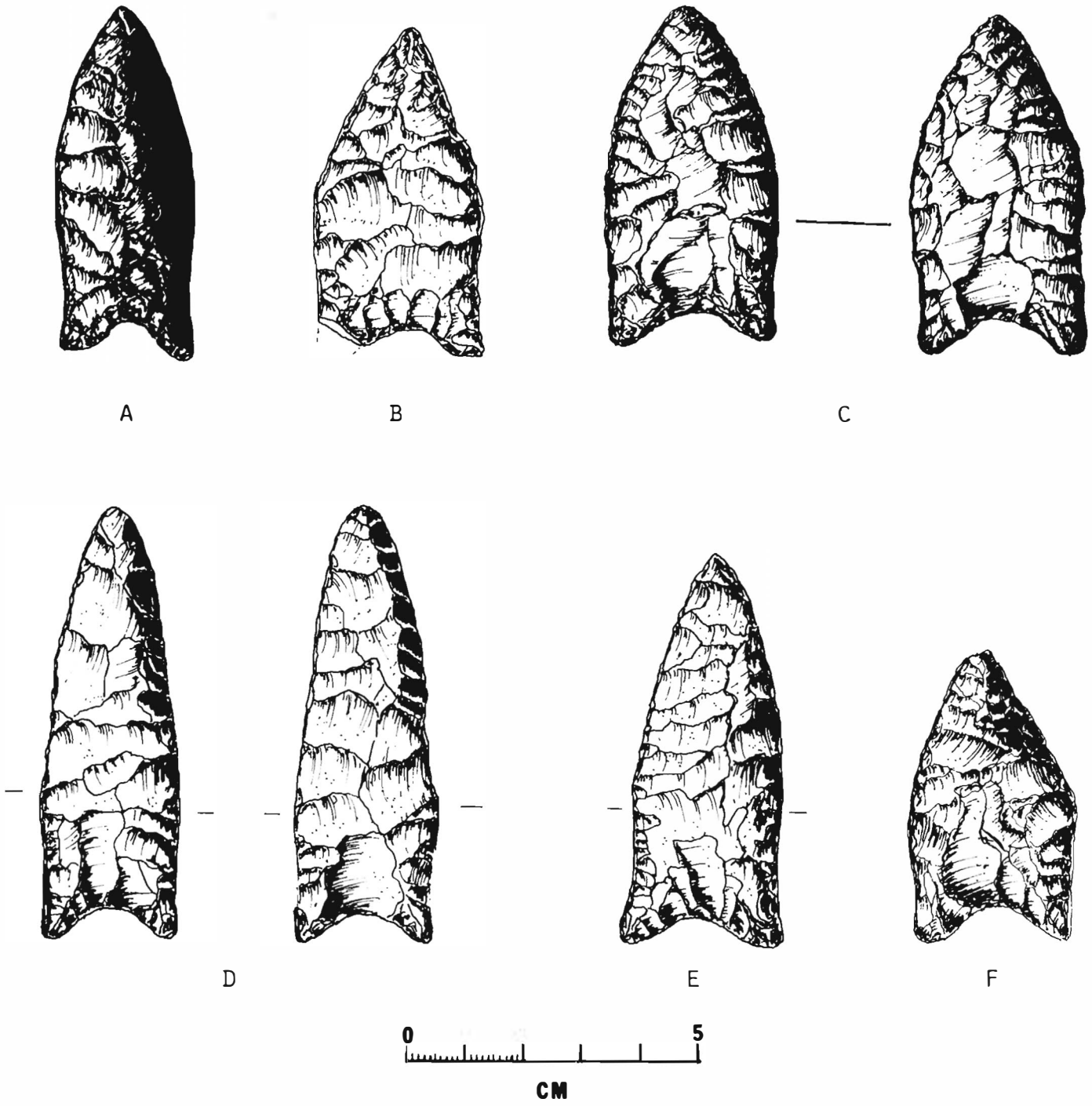



Figure 5. *Golondrina* Points. A, Wayne Parker, *La Tierra*, 1978, Zapata County, Texas; B, Witte Museum, Giles Collection, Kendall County, Texas. Bevelled edges; C, Witte Museum, Bexar County, Texas. Bevelled edges; D, McReynolds, *La Tierra*, 1980; E, McReynolds, *La Tierra* 1979; F, C. K. Chandler, Limestone County, Texas. Bevelled edges.

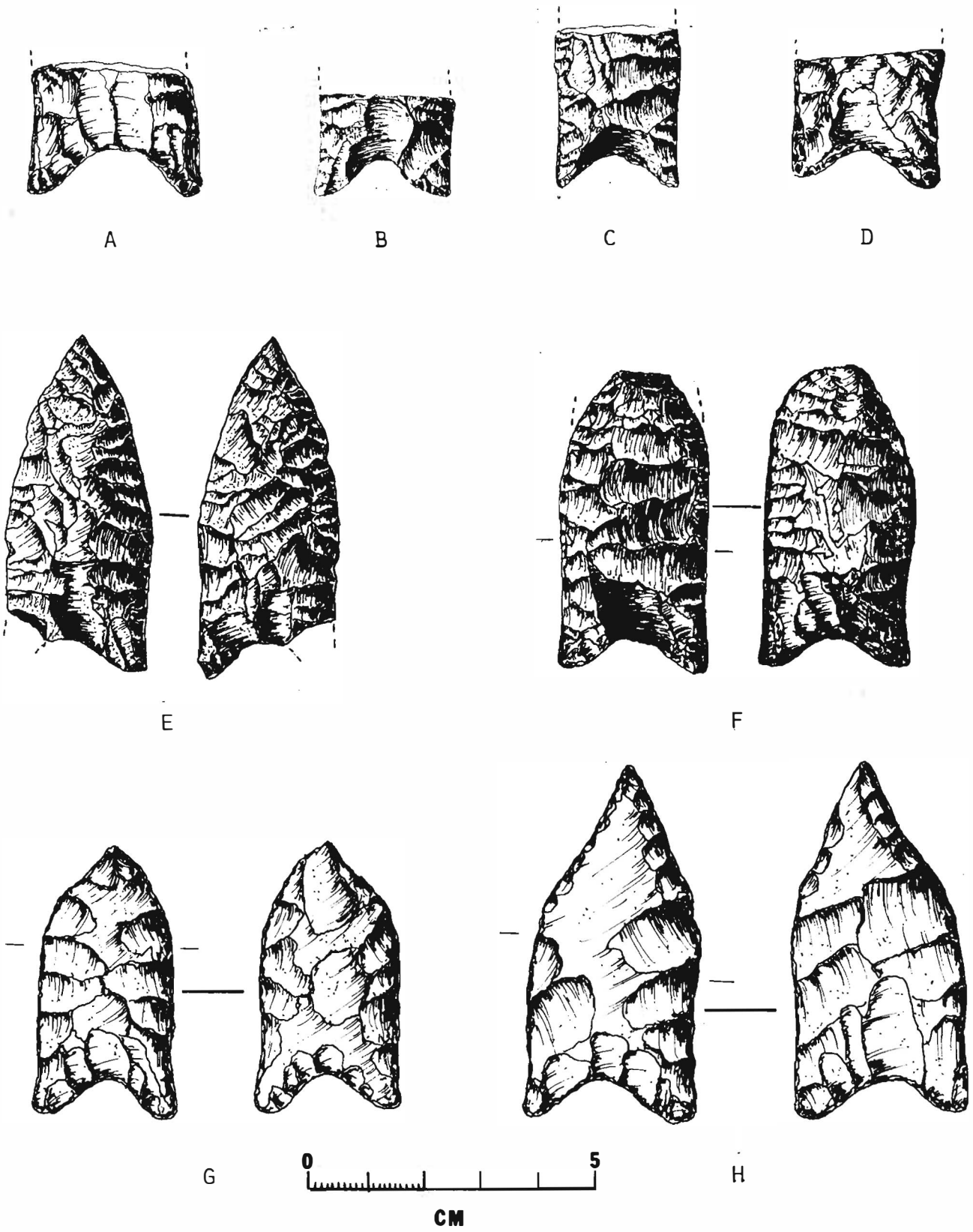
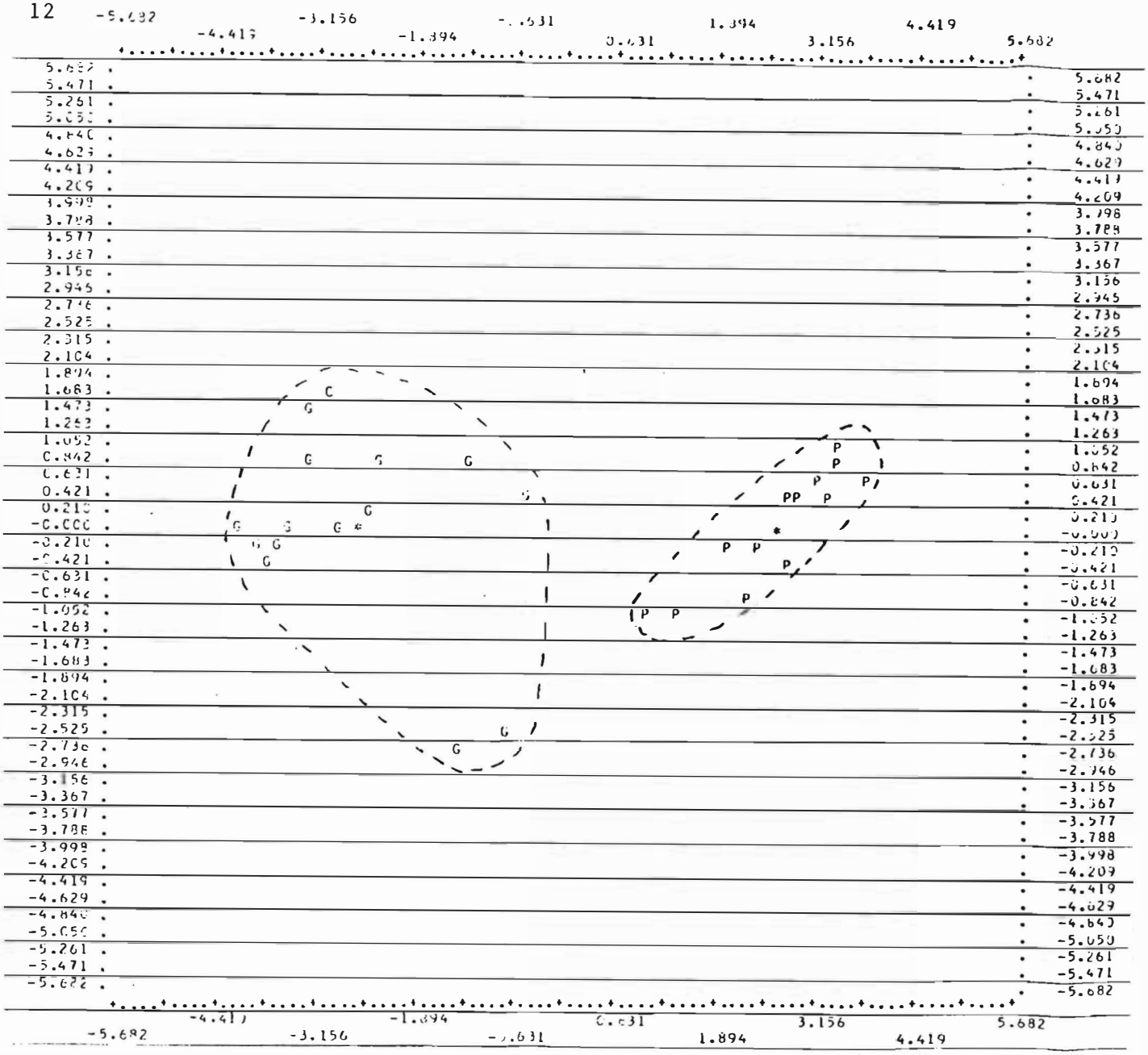



Figure 6. *Golondrina* Points and Fragments. A, C. K. Chandler, Milam County, Texas; B, UTSA, 41 KA 20, Karnes County, Texas; C, UTSA, 41 KA 36A, Karnes County, Texas; D, Witte Museum, Pohl Collection, Williamson County, Texas; E, Malcom Johnson, Kerr County, Texas; F, UTSA, 41 KA 36B, Karnes County, Texas; G, John Stockley, Maverick County, Texas; H, 41 BX 1, Harnish Collection, Bexar County, Texas.




* Group Means
X -Axis is First Canonical Variable.
Y -Axis is Second Canonical Variable.

Program Step Discriminant Analysis BMD07M (Dixon, 1974)
Nine variables (attributes), 14 *Plainview* Type Site Points,
15 *Golondrina* Type Site Points.

The *Plainview* parameter is characteristic of a normal population distribution (point type). The *Golondrina* parameter is an abnormal population distribution with the distance between some individual members being greater than the distance between *Plainview* and *Golondrina* group means. Factor analysis showed an even greater spread of the *Golondrina* points.

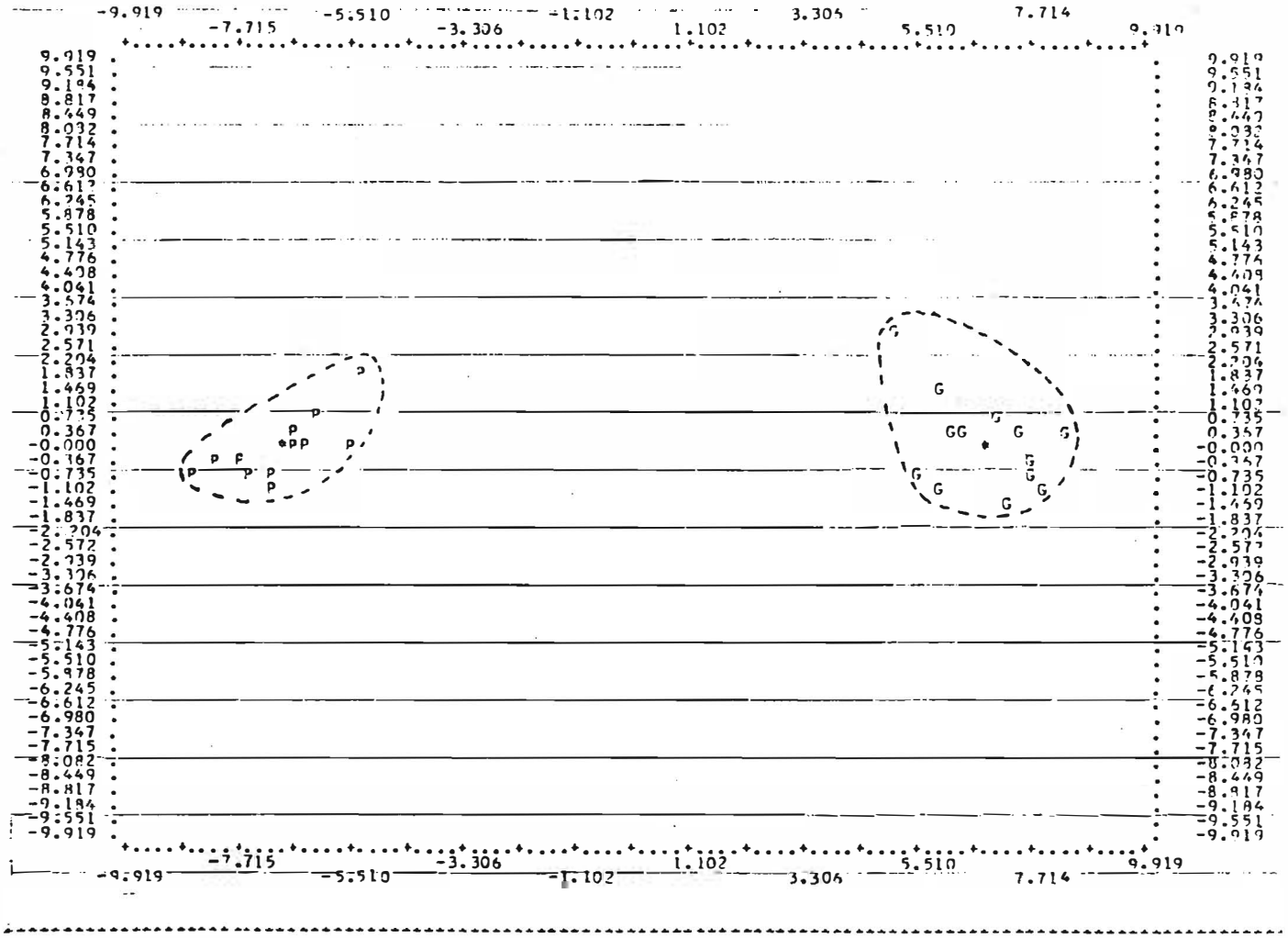
The conclusion reached is that there is more than one population or point type represented in the original *Golondrina* type site points.

Figure 7. Initial Computer Plots - *Plainview* and *Golondrina* Points.

Table 2. *Golondrina* Data.

| Fig. | Lgth. | Thick. | GRED | BCON | Width | HDIST | HPROX | TYFL | BTHIN |
|---|---|---|---|---|---|---|---|---|---|
| 1B | 80 | 8 | 18 | 5 | 26 | 23 | 27 | 3 | 2 |
| 4A | 61 | 6 | 26 | 7 | 23 | 22 | 23 | 3 | 2 |
| 4B | 63 | 7 | 25 | 8 | 28 | 26 | 27 | 3 | 2 |
| 4K | 69 | 7 | 23 | 8 | 28 | 27 | 29 | 3 | 2 |
| 4L | () | 7 | 25 | 7 | 31 | 27 | 29 | 1 | 2 |
| 5A | 58 | 5 | 28 | 6 | 23 | 21 | 22 | 3 | 2 |
| 5B | 55 | 7 | 24 | 7 | 29 | 27 | 29 | 3 | 2 |
| 5C | 57 | 7 | 26 | 7 | 30 | 28 | 29 | 3 | 2 |
| 5D | 75 | () | 21 | 5 | 24 | 22 | 23 | 3 | 2 |
| 5E | 67 | 7 | 23 | 5 | 26 | 24 | 28 | 3 | 2 |
| 5F | 50 | 6 | 19 | 6 | 29 | 26 | 28 | 3 | 2 |
| 6E | 60 | 6 | 26 | 6 | 27 | 24 | 27 | 3 | 2 |
| 6F | () | 6 | 24 | 6 | 27 | 25 | 27 | 3 | 2 |
| 6G | () | 8 | 21 | 6 | 25 | 24 | 26 | 3 | 2 |
| 6H | 62 | 6 | 23 | 7 | 30 | 29 | 31 | 3 | 2 |
| Mean | 63 | 6.6 | 23.5 | 6.4 | 27.2 | 25 | 27 | | |
| Maximum | 80 | 8 | 28 | 8 | 31 | 29 | 31 | | |
| Minimum | 50 | 5 | 18 | 5 | 23 | 22 | 22 | | |

() Broken or missing data.




Program Step Discriminant Analysis BMD07M (Dixon 1974).
Nine variables, 13 *Plainview*, 13 *Golondrina* Points.

The *Plainview* data is the same as Figure 7, but the *Golondrina* data is from complete points that fit Johnson's (1964) exact type description.

The two populations are even more distinctly separate and the *Golondrina* parameter is that of a single population or point type.

Figure 8. Later Computer Plots of *Plainview* and *Golondrina* Points.

accord with Johnson's type description. Only 19 complete *Golondrina* points have so far been recorded. Suhm, Krieger and Jelks (1954:6) used a minimum of 100 complete points in establishing their types. Your help is solicited to find an additional 81 complete or nearly complete *Golondrina* points.

Chronology and distribution are equally important as morphology in establishing a useful type.

## *PLAINVIEW* AND *GOLONDRINA* DATING

Holliday and Johnson (1981) list a tight cluster of eight radiocarbon dates for *Plainview* points that fall between 8010 B.C. and 8135 B.C. (Bonfire Shelter, Dibble 1970; Plainview, Sellards *et al.* 1947; and Lubbock Lake, Johnson and Holliday 1980). A date of 7350 B.C. is also given for the stratum immediately above the Lubbock Lake *Plainview* occupation.

Hester (1980) lists a cluster of five *Golondrina* dates between 6830 B.C. and 7080 B.C. (Devil's Mouth, Sorrow 1968; Baker Cave, Word and Douglas 1970; Hester 1980). Excavations at St. Mary's Hall (Hester 1978, 1980) found *Golondrina* points stratigraphically above a *Plainview* campsite. This 1000-year time difference and stratigraphic separation also indicates that *Plainview* and *Golondrina* are separate point types.

## DISTRIBUTION

The complete distribution of *Plainview* points is beyond the scope of this paper and badly in need of revision. Since discovery of the *Plainview* type site (Sellards *et al.* 1947) almost any point that was lanceolate with basal grinding and any degree of base concavity has been called *Plainview* or *Plainview*-like from Alaska to Mexico and almost coast to coast. Dates were estimated as 7000 B.C. to 2000 B.C. (Suhm, Krieger and Jelks 1954).

Dated excavations in recent years and more rigid typological studies have narrowed the *Plainview* distribution in time and space (George Frison, University of Wyoming, in a classroom handout of Plains Chronology, illustrates a number of excavated and dated points that were formerly lumped into the *Plainview* rubric).

Scattered surface finds are reported Texas-wide, but excavated (*in situ*) sites are limited to the Texas Panhandle (Lubbock and Plainview), San Antonio (St. Mary's Hall) and the conjunction of the Pecos and Rio Grande rivers (Bonfire Shelter).

*Golondrina* distribution (Figure 9) so far covers 23 counties bounded by the Devil's River, the Rio Grande, the Lower Gulf Coast, the Brazos River, and from Limestone County back southwest across the southern end of the Edwards Plateau to the Devil's River. This distribution is not final nor as extensive as Johnson's (1964). It is based on points classified by the criteria of this paper (and is admittedly woefully short of complete *Golondrina* points).

## TECHNOLOGICAL COMPARISONS

Factor Analysis focused attention on a technological difference between the two point types. A strong negative correlation existed between the length of the shortest ground edge (the maximum probable extent of haft binding or enclosure) and the depth of the basal concavity. The greater the base concavity, the less the length of the binding on the dulled edges. From geometrical considerations (see Figure 10) it is apparent that *Plainview* points could easily be hafted in bison rib foreshafts as Knudson (1973:56) suggests. Even the *Plainview* point with the greatest recurved edges (Figure 2F) is only 1.2 mm incut and would fit, albeit not perfectly. However, because of their widely flared and heavily ground ears, *Golondrina* points would fit in split-stick shafts or foreshafts only. Less of the point's length is covered with binding because the basal concavity permits the use

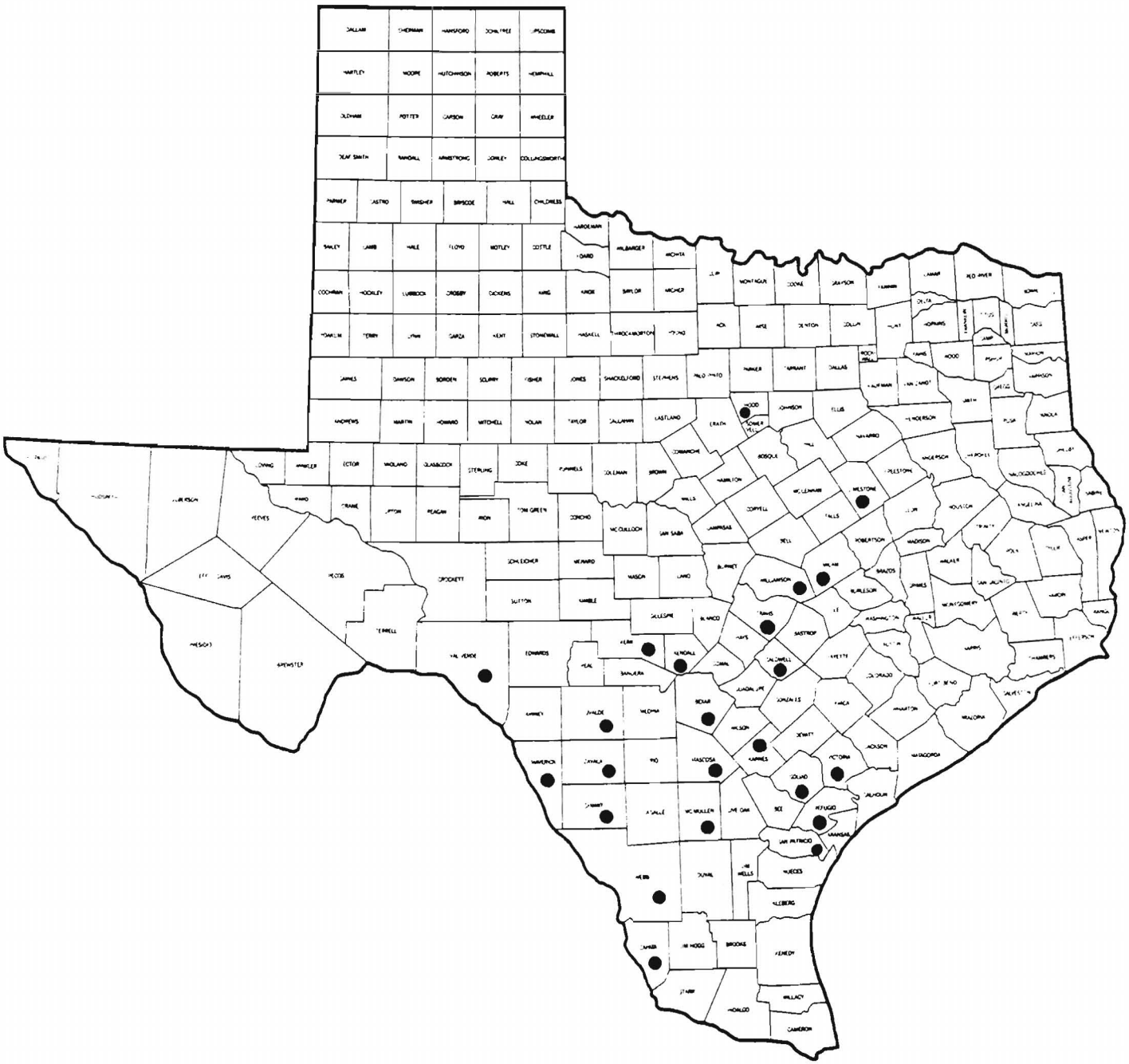


Figure 9. *Golondrina* Point Distribution.

of less split stick in reaching a suitable binding position. Because the *Golondrina* ground ears bear against the solid non-split part of the shaft and bindings, it has strong resistance to force F (Figure 10) applied to the distal edges and tip of the point. More cutting edges are also exposed than would be on *Plainview* points mounted either in bone socket or split-stick mode. As a dual purpose tool, the *Golondrina* point would make a better butchering tool than *Plainview*.

This hypothesis was tested in a crude laboratory experiment using replicated points (courtesy of J. B. Sollberger), bathroom scales, a hydraulic jack, and bench vise. More than 52 pounds of pressure were required to shift the *Golondrina* point (hafted as shown in Figure 10) in its bindings, and even then it was still usable for further butchering and still serviceable as a projectile point. With the same amount of binding, a replicate *Plainview* point broke its bindings at 41 pounds pressure. With bindings two-thirds the length of the point, the tip snapped off at 67 pounds pressure.

Dan Potter butchered a road-killed whitetail deer with a *Golondrina* replica in a short split-stick mount without exerting enough force to affect its bindings, but did snap the tip off from a force at right angles to the point face while disjointing the animal. These simple experiments, while not conclusive, do prove the efficiency of both types as butchering tools, and suggest that our high ratio of *Golondrina* bases to complete points could be caused by butchering forces at right angles to the point's face with high leverage against the unsupported length of the point. Socketed in bone for two-thirds its length, *Plainview* would require very heavy forces to break the point. Fourteen out of 15 *Plainview* type site points were complete despite heavy use as butchering tools (Knudson 1973).

Micro-wear pattern analysis showed light spalling and crushing on lateral edges usually associated with butchering, and the same pattern was observed on the few complete *Golondrina* points available at The Center for Archaeological Research, UTSA (Kelly ms). The most distinctive and heaviest patterns were on the two alternately-bevelled Chandler and Harnish points (Figures 5F, 6H). Sollberger (1971) has commented on the efficiency of bevelled edges as knives. Wheat (1976, 1979) considers this dual function as projectile point and knife to be an actual High Plains trait during Late Paleo-Indian times.

Ballistically, the streamlined *Plainview* point would be superior where deep penetration of very large animals such as bison was required where the flared and ground *Golondrina* ears would resist penetration of large game. *Golondrina* would be quite adequate, however, for hunting deer and antelope, as suggested at Baker Cave (Word and Douglas 1970; Hester 1980), and at the same time would serve as a superior butchering tool (if the risk of breakage is ignored).

There are no known *Golondrina* kill sites to compare to *Plainview* sites. The extensive flora and fauna collections from Baker Cave are indicative of a hunting and gathering life-style, probably no different from the following Archaic time period in the same area.

## CONCLUSIONS

*Golondrina* as defined by Johnson (1964) is a valid point type, securely dated and distinguishable from *Plainview* and South Texas "*Angostura*" points. The points he used as examples, however, contained more than one point type.

Points with deep basal concavities (herein defined as four or more millimeters deep), parallel or contracting stems, are found on the High Plains (*Allen*, *Lovell Constricted*) and in South and Central Texas surface collections (Brom Cooper, Barber). They should not be called *Golondrina* solely on the basis of the indented base.

Time, areal distribution and morphology indicate that there is no direct relationship between *Plainview* and *Golondrina* point types. *Plainview* appears to have been an earlier Plains development by big game hunters and well adapted for the purpose.

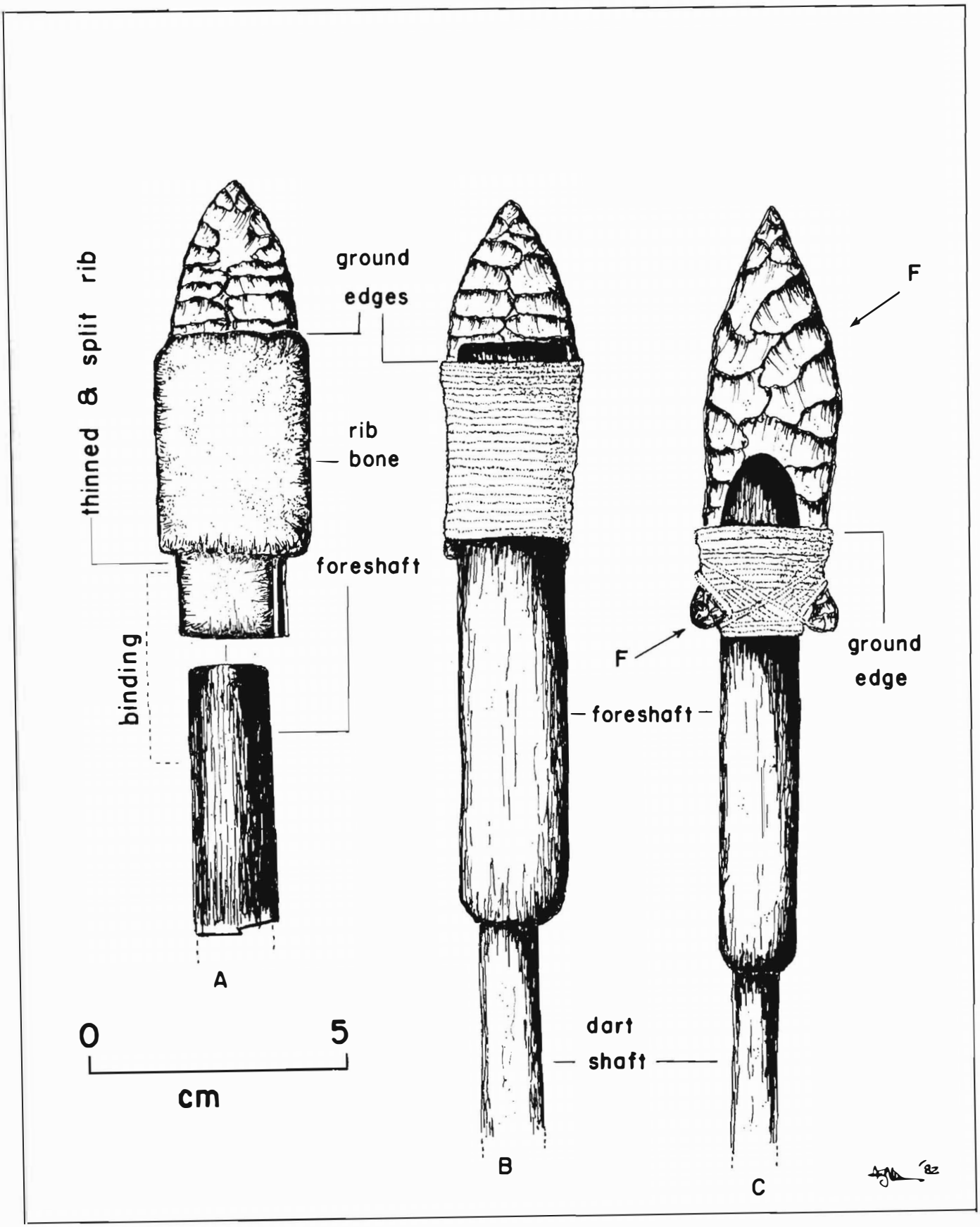



Figure 10. Possible hafting methods using *Plainview* or *Golondrina* points.

*Golondrina* looks like a later indigenous South and Central Texas development equally well adapted to hunting smaller game such as deer and antelope. Ties to Northeastern Mexico have been suggested by Epstein (1969) and Hester (1980).

Both *Plainview* and *Golondrina* occupations occurred at St. Mary's Hall (Hester 1978, 1980) possibly separated by a thousand years, with little to indicate any difference in life-styles between them and later Archaic occupations of the same site.

## A MANUAL CLASSIFICATION PROGRAM FOR *PLAINVIEW* AND *GOLONDRINA* POINTS

The discriminant analysis program provides the classificatory power of each attribute in the order of its importance. Six attributes provided all the classification. Redundant attributes (where overlapping ranges are non-discriminating between the types) are length, thickness, and length of ground edge. Three attributes (width, haft distal and haft proximal widths) roughly define the difference in edges of the points. They are all arcs along the length of a point (Whallon and Brown 1982:75). Ideally one could measure the width every few millimeters of the length and the computer could print the actual outline of points.

Depth of the basal concavity, type flaking and type of basal thinning complete the required attributes required for classification. The three width measurements will also identify contracting stem points. Those with stem widths less than 18 mm are probably our still poorly-defined "*Angostura*" points of Southern Texas.

Computer time is expensive and uneconomical for classifying a small number of points, so a manual program was evolved using only the computer-derived classification power of the six attributes (rounded off to the closest 5%). Ranges and means were recomputed for each attribute using a pocket calculator from the type data tables (Tables 1 and 2). A clear plastic millimeter scale, a projectile point, a pencil, and the following form are the only tools needed.

Use of this manual program pointed out a deviant point which any real statistician would have noted in the computer printouts of standard deviation. The point, Figure 3F (Knudson's 1973:D8D from the Texas Memorial Museum type site matrix), has basally ground edges of only 12 mm and 14 mm compared to an otherwise range of 21 to 45 mm with a mean of 32 mm. It is the only type site point suited for split-stick hafting. The basal edges are either deeply ground or deliberately incut in the *Eden* point tradition. Frison (handout) shows a *Shiffer Cave* point that appears identical. It is clearly not a *Plainview* point.

## INSTRUCTIONS FOR USE OF CLASSIFICATION FORM

Step 1. Compare your unclassified point with Figure 1. If it doesn't resemble either point, you probably don't have a *Plainview* or *Golondrina*, but filling in the form may still be helpful.

Step 2. Outline point on bottom of form and make measurements as per Figure 1.

Step 3. Fill in the UNCLASSIFIED column. Room is sufficient for several points.

Step 4. Check first three attributes to see if your point falls within RANGE.

Step 5. BCON. If less than 4 mm, circle the 40 on *Plainview* side; if more, on the *Golondrina* side; if 4 mm, circle both.

Step 6. Subtract HPROX from HDIST, then HPROX from Width and add the two results. Circle the 30% on *Plainview* side if total is 0 to +3, to *Golondrina* side if 0 to -5. If total is larger than + 3, you probably have a contracting stem point.

# FORM FOR CLASSIFICATION OF *PLAINVIEW* AND *GOLONDRINA* POINTS

| *PLAINVIEW* | | UNCLASSIFIED | | *GOLONDRINA* |
|---|---|---|---|---|
| Attribute | Range | | | Range |
| Length | 50-74 | | | 55-80 |
| Thickness | 5-7 | | | 6-8 |
| GRED | 21-45 | | | 18-28 |
| | % Class. | | % Class. | |
| BCON | 1-4 | 40 | 40 | 4-10 |
| Width | 21-26 | | | 23-31 |
| HDIST | 20-25 | | | 22-29 |
| HPROX | 20-24 | | | 22-31 |
| HDIST -HPROX | - 1 to +1 | | | - 1 to -4 |
| Width -HPROX | 0 to +2 | | | - 2 to +2 |
| Total | 0 to +3 | 30 | 30 | 0 to -5 |
| TYFL | 1 | 20 | 20 | 3 |
| BTHIN | 1 | 10 | 10 | 2 |
| Score | | | | |
| Class. | | P | G | |

OTHER

Measure to closest millimeter. Measure HPROX at widest point of flared ears, bottom of base otherwise. Measure HDIST at 10 mm above base, Width at 20 mm above base, basal fragments only, otherwise widest point above that. The three Width measurements together define parallel, recurved and contracting stemmed points. If HDIST minus HPROX = +2 or more and the Width is greater than HDIST, it is a contracting stem point, probably our South Texas "*Angostura*" if HPROX is less than 18 mm and TYFL = 2, oblique parallel flaking.

TYFL: 1 = Horizontal Parallel; 2 = Oblique or Diagonal Parallel; 3 = Irregular.
BTHIN: 1 = Long Narrow Vertical Scars; 2 = Short Lunate Scars; 3 = Irregular.

Drawing and Data

# EXAMPLE

## FORM FOR CLASSIFICATION OF *PLAINVIEW* AND *GOLONDRINA* POINTS

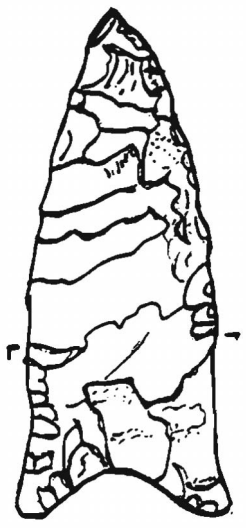
| | *PLAINVIEW* | | UNCLASSIFIED | | *GOLONDRINA* |
|---|---|---|---|---|---|
| Attribute | [redacted] | | | | Range |
| Length | 50-74 | | 67 | | 55-80 |
| Thickness | 5-7 | | 7 | | 6-8 |
| GRED | 21-45 | | 23 | | 18-28 |
| | | % Class. | | % Class. | |
| BCON | 1-4 | 40 | 5 | (40) | 4-10 |
| Width | 21-26 | | 26 | | 23-31 |
| HDIST | 20-25 | | 25 | | 22-29 |
| HPROX | 20-24 | | 28 | | 22-31 |
| HDIST -HPROX | - 1 to +1 | | -3 | | - 1 to -4 |
| Width -HPROX | 0 to +2 | | -2 | | - 2 to +2 |
| Total | 0 to +3 | 30 | -5 | (30) | 0 to -5 |
| TYFL | 1 | 20 | 3 | (20) | 3 |
| BTHIN | 1 | 10 | [redacted] | (10) | 2 |
| Score | | | | 100 | |
| Class. | | P | OTHER | (G) | |

Measure to closest millimeter. Measure HPROX at widest point of flared ears, bottom of base otherwise. Measure HDIST at 10 mm above base, Width at 20 mm above base, basal fragments only, otherwise widest point above that. The three Width measurements together define parallel, recurved and contracting stemmed points. If HDIST minus HPROX = +2 or more and the Width is greater than HDIST, it is a contracting stem point, probably our South Texas "*Angostura*" if HPROX is less than 18 mm and TYFL = 2, oblique parallel flaking.

TYFL: 1 = Horizontal Parallel; 2 = Oblique or Diagonal Parallel; 3 = Irregular.
BTHIN: 1 = Long Narrow Vertical Scars; 2 = Short Lunate Scars; 3 = Irregular.

Drawing and Data

McReynolds, 1979 La Tierra 6(2)
Kelly 1982: Fig 5 6.
ATASCOSA CO. TEXAS
SAN MIGUEL CREEK.



# EXAMPLE

## FORM FOR CLASSIFICATION OF *PLAINVIEW* AND *GOLONDRINA* POINTS

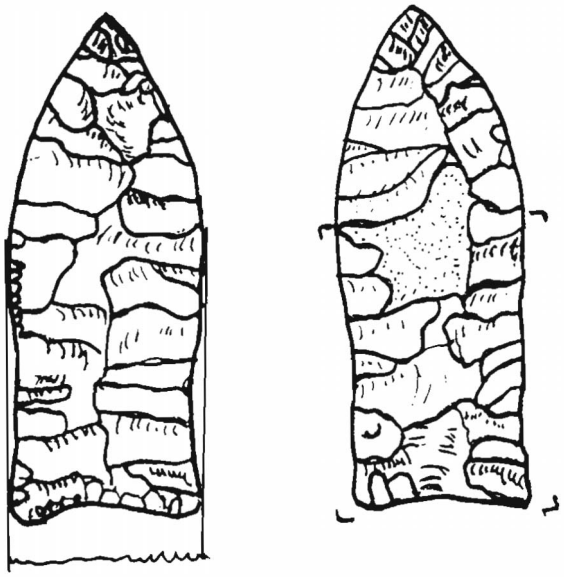
| Attribute | *PLAINVIEW* [redacted] | % Class. | UNCLASSIFIED | % Class. | *GOLONDRINA* Range |
|---|---|---|---|---|---|
| Length | 50-74 | | 69 | | 55-80 |
| Thickness | 5-7 | | 7 | | 6-8 |
| GRED | 21-45 | | [redacted] | | 18-28 |
| BCON | 1-4 | (40) | | 40 | 4-10 |
| Width | 21-26 | | 26 | | 23-31 |
| HDIST | 20-25 | | 23 | | 22-29 |
| HPROX | 20-24 | | 24 | | 22-31 |
| HDIST -HPROX | - 1 to +1 | | -1 | | - 1 to -4 |
| Width -HPROX | 0 to +2 | | +2 | | - 2 to +2 |
| Total | 0 to +3 | (30) | +1 | 30 | 0 to -5 |
| TYFL | 1 | (20) | 1 | 20 | 3 |
| BTHIN | 1 | 10 | 2 | (10) | 2 |
| Score | | 90 | | 10 | |
| Class. | | (P) | OTHER | G | |

Measure to closest millimeter. Measure HPROX at widest point of flared ears, bottom of base otherwise. Measure HDIST at 10 mm above base, Width at 20 mm above base, basal fragments only, otherwise widest point above that. The three Width measurements together define parallel, recurved and contracting stemmed points. If HDIST minus HPROX = +2 or more and the Width is greater than HDIST, it is a contracting stem point, probably our South Texas "*Angostura*" if HPROX is less than 18 mm and TYFL = 2, oblique parallel flaking.

TYFL: 1 = Horizontal Parallel; 2 = Oblique or Diagonal Parallel; 3 = Irregular.
BTHIN: 1 = Long Narrow Vertical Scars; 2 = Short Lunate Scars; 3 = Irregular.

Drawing and Data

Plainview Type Site
KNUDSON, 1973
FIGURE 6.6
(Kelly 1982: Fig 2F)
Point has 1 mm Recurve Base Thinning actually done by Collateral flaking with SHORT LUNATE RETOUCH SCARS THIS IS CHARACTERISTIC of most of the MILNESAND Points.
COULD [redacted] into socketed foreshaft but more probable "clothes Pin"



Step 7. If TYFL is horizontal parallel, circle the 20% in *Plainview* column; if random, the 20% in *Golondrina* column; if oblique and narrow parallel, it is an *Angostura* attribute.

Step 8. If BTHIN is long vertical flake scars, circle the 10 in *Plainview* column; if short lunate scars, the 10 under *Golondrina*. If point has one type flaking or thinning on each side, circle percentages both columns. This is not too uncommon.

Step 9. Total the % CLASSIFICATION SCORE in each column. From 70% to 100% circle the appropriate classification. Less than 70%, circle the OTHER column and look elsewhere for classification.

The form is really far more simple than this explanation - try it out. Copies of your forms are solicited to increase the data bank for *Plainview, Golondrina* and contracting-stem Paleo-Indian points. Mail them to: The Center for Archaeological Research, U.T.S.A., San Antonio, Texas, 78285.

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The author would like to thank Dr. Ruthann Knudson for permission to use her exceptionally fine line drawings of the *Plainview* type site points. Al McGraw, Center for Archaeological Research, UTSA, produced the *Golondrina* point drawings to a one millimeter accuracy. Dr. Thomas R. Hester has provided encouragement and patient guidance since 1975. Dr. Joel Gunn introduced me to multivariate analysis for this project. Elusive *Golondrina* points and data have been provided by Bobbie McGregor (and the Witte Museum), C. K. Chandler, Wayne Parker, John Stockley, Sonny Timme, Carol Canty, Malcom Johnson, J. B. Sollberger, Brom Cooper, and Richard, Ben and Mike McReynolds.

The sins of omission and commission, however, are solely my own.

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The cover illustrations for this issue highlight Kelly's discussion of the *Plainview* versus *Golondrina* point types. The *Plainview* specimen shown to the left is from the *Plainview* type site, taken from Knudson (1973:Fig. D8A) with permission of the author. The *Golondrina* specimen shown to the right is from a site near San Miguel Creek in Atascosa County, southern Texas, reported by McReynolds, *et al.* (1979); this *Golondrina* illustration was drawn by Richard McReynolds of San Antonio.

# PALEO-INDIAN PROJECTILE POINTS FROM SAN PATRICIO COUNTY, TEXAS, TEXAS COASTAL BEND

C. K. Chandler

Of ten sites surveyed and recorded along Chiltipin Creek* in San Patricio County, Texas by the author and the late D. R. Espy, four (41 SP 69, 41 SP 75, 41 SP 79) have produced a significant number of Paleo and Pre-Archaic artifacts.

Chiltipin Creek is the major drainage course for all of central San Patricio County (see Figure 1). This creek originates in the westernmost part of the county about eleven miles west of Sinton and flows roughly eastward about thirty-six miles to its mouth in the delta area of the Aransas River above Copano Bay.

There is little topographic relief in San Patricio County. Most of the land in the county was in cultivation at the time these sites were recorded and these artifacts recovered. The sites producing Paleo materials are along the upstream end of Chiltipin Creek. In this area the channel is quite narrow and shallow and the sites are immediately adjacent to the creek. Topographic maps show these areas to be covered by woodland growth as recently as 1954. Later land clearing and channel modification have permitted a faster rate of flow along the upper reaches of the creek, and this has accelerated site erosion. These sites were recorded when they were exposed by heavy flooding in 1968 and 1969. Flood waters had removed up to 25 cm of topsoil in cultivated areas and exposed several sites that had apparently been covered for many thousands of years. We had walked over much of this area in 1967 and found only two sites. All except one of the sites we recorded have predominately Archaic artifact assemblages. Late-Prehistoric artifacts are extremely scarce. Many of these sites can no longer be found.

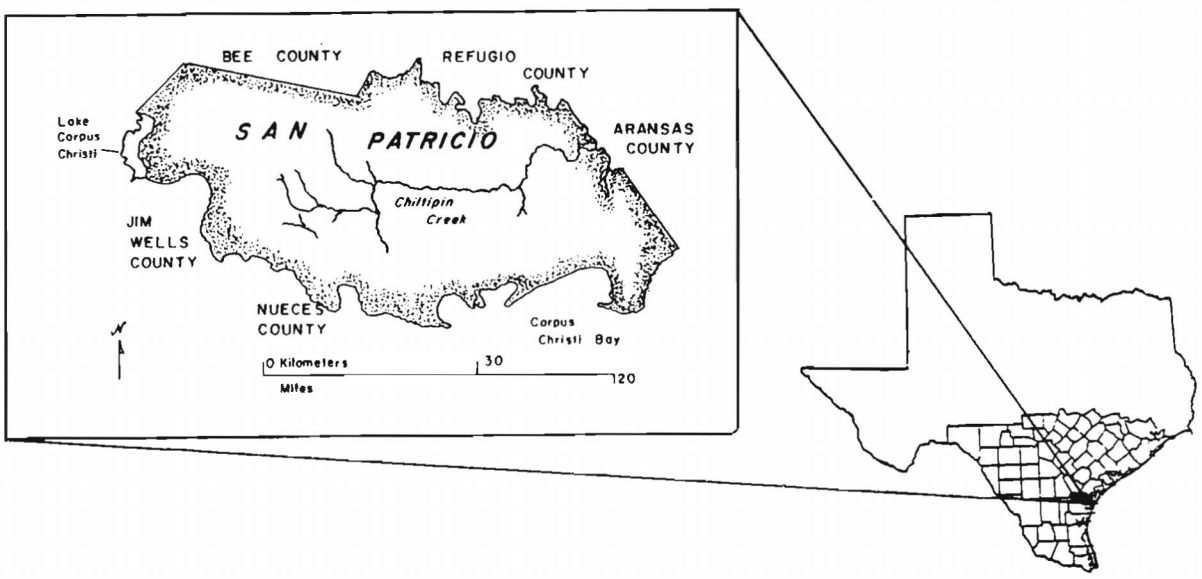


Figure 1. Map of San Patricio County, Texas, showing the extent of its Chiltipin Creek. (Map developed by A. Joachim McGraw.)

* There are at least three Chiltipin Creeks in the Texas Coastal Bend area. When speaking of Chiltipin Creek, there is a need to define exactly which one is being referred to.

Two of the Chiltipin Creek sites (41 SP 69, 41 SP 75) that have produced Paleo and Pre-Archaic projectile points had recognizable midden areas. Site 41 SP 69 also had considerable lithic debitage, large animal bone and some evidence of human burials (cranium fragments). In addition to a wide range of dart point styles ranging from Early Paleo *Clovis* through later Paleo *Plainview*, *Golondrina* and *Angostura*, there are Pre-Archaic *Early Triangular*, *Bell* and *Gower* types, Archaic stemless forms of *Abasolo*, *Lerma*, *Tortugas*, various side-notched, corner-notched and base-notched styles as described by Suhm and Jelks (1962). There is a full lithic tool assemblage represented by bifacial gouges, large and small bifaces, choppers, side- and end- flake scrapers, several kinds of cores including prepared platform polyhedral cores, flake blades, abraded sandstone, a few pottery fragments and a few arrow points of the *Perdiz*, *Scallorn* and *Fresno* types.

There has been a considerable amount of archaeological investigation carried out in San Patricio County, but controlled excavations have been scarce. Holliday and Grombacher (n.d.) report surface finds of one *Angostura*, one *Golondrina* and one *Scottsbluff* from 41 SP 99 on Chiltipin Creek east of Sinton. James E. Corbin (1963) reported on 16 sites along the northern shore of Corpus Christi Bay, and Dee Ann Story (1968) reported on test excavations at 41 SP 43, the Ingleside Cove Site. There were no Paleo materials reported from any of these sites.

There is often a difference of opinion among professionals regarding point typology. This is indicated by Johnson's reclassification as *Golondrina* of several of the San Isidro Site *Plainview* specimens reported by Epstein. The Chiltipin Creek materials are illustrated and described here on the basis of the author's understanding of existing criteria. All dimensions are in millimeters. Weights are in grams. Abbreviations are: L, length; W, width; T, thickness; and Wt., weight.

Figure 2 (a-a'). *Clovis*. Made of reddish-tan, very fine-grained quartzite that appears to have been heat treated. Predominately horizontal parallel flake scars. Base thinned by removal of one channel flake 16 mm long on one side and two smaller channel flakes from the opposite side. The longer of these two channel flakes is 19.7 mm. Base and lateral edges neatly retouched and ground. One lateral edge lightly damaged near the distal end and near the base. This appears to be plow damage (Mallouf 1982). Dimensions are: L, 76.2; Base W, 20.3, Max. W, 22.4; Max. T, 7.5 Basal concavity, 3. Wt, 15.3.

Figure 2 (b). Unidentified. Light brown flint with small light flecks. Irregular flake scars. Base thinned by two short, wide parallel flakes on one side and two short lunate flakes on opposite side. One lateral edge is broken adjacent to the tip. This artifact has the appearance of an *Angostura* preform and may be unfinished; however, lateral edges and base are lightly ground and this may indicate a degree of completeness for use. Dimensions are: L, 59.0; Base W, 17.7; Max. W, 31.3; T, 10.0; Basal concavity, 1.0. Wt., 19.5.

Figure 2 (c). *Angostura*. Slightly mottled brownish tan flint. Predominately irregular flake scars though some are parallel. The straight base is covered with cortex that shows some grinding. Some effort was made to thin the base from one side but with minimal success. Lateral edges have been neatly retouched and ground. Dimensions are: L, 71.3; Base W, 13.6; Max. W, 23.9; T, 11.3. Wt., 15.3.

Figure 2 (d). *Angostura*. Pinkish tan slightly mottled flint. Predominately irregular flake scars but one edge has oblique parallel flaking. Base is broken and this appears to have occurred in the manufacturing process. Base is slightly concave with a depth of 1 mm. Base is thinned on one side by one large thinning flake that originated below the present base. The other side has four small, short thinning flakes that originated from the existing base. Lateral edges are lightly ground. Dimensions are: L, 70.0; Base W, 14.5; Max. W, 23.7; T, 8.4. Wt., 15.2.

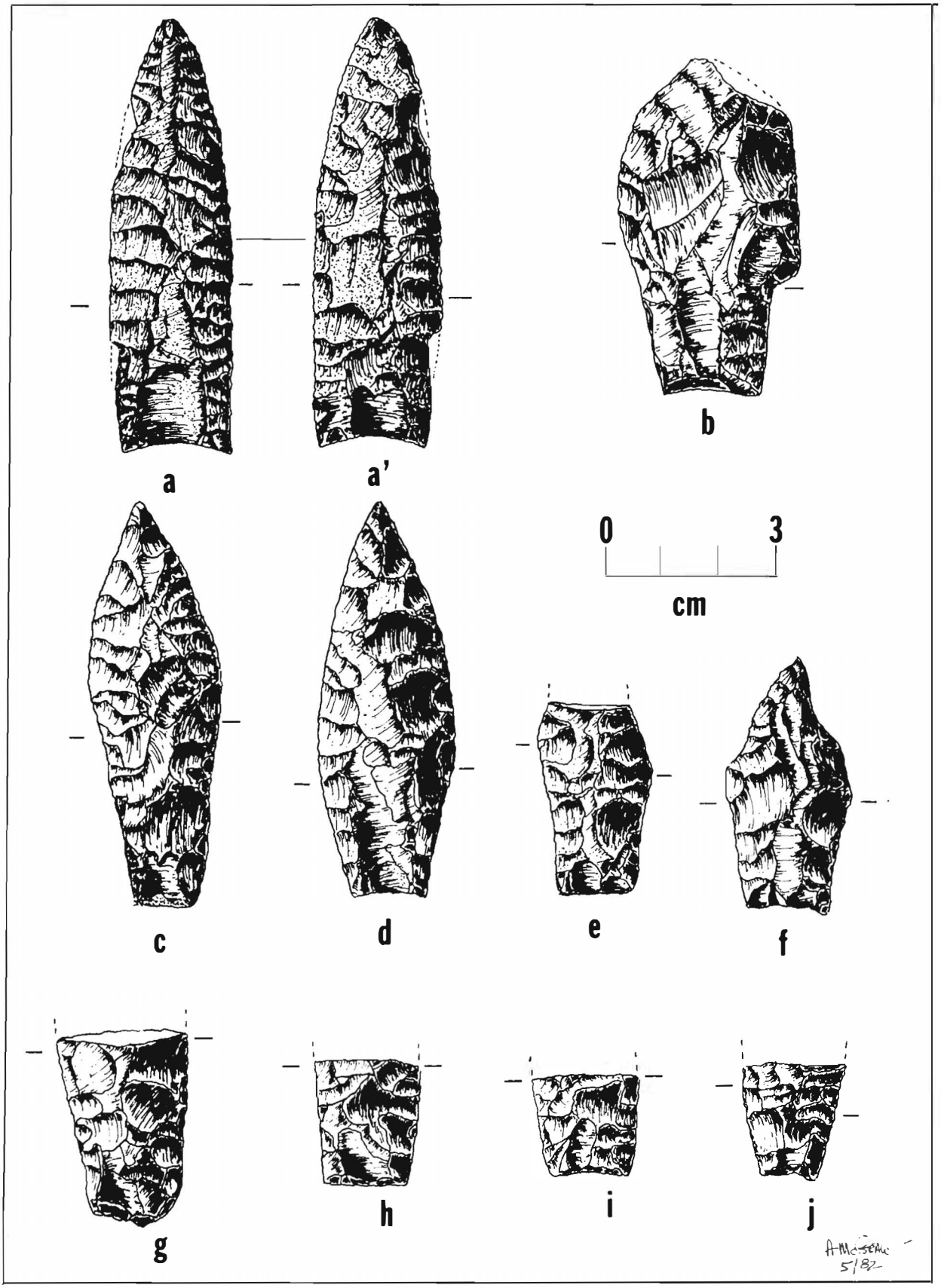


Figure 2. Paleo-Indian Projectile Points from San Patricio County, Texas: a, *Clovis*; b, Unidentified; c-j, *Angostura*. (Drawings by A. Joachim McGraw.)

Figure 2 (e). *Angostura* fragment. Pinkish tan flint. Predominately horizontal parallel flaking. Distal portion is missing. Break occurred slightly above its widest point. Blade edges appear to have been resharpened with more than normal restriction. Base is straight and has been thinned from both sides with three or four short, steep lunate flakes. Surface has a waxy feel and light glossy appearance as if heat treated. Lateral edges are heavily ground and base lightly ground. Dimension are: L, 34.3; Base W, 15.2; Max. W, 21.5; T, 7.8. Wt., 6.8.

Figure 2 (f). *Angostura*. Yellowish tan poor grade chert. Does not flake well. Flaking is irregular and some flakes terminate in step fractures. The poor quality of the material is reflected in an overall poor appearance. Blade edges appear to have been resharpened with more than normal restriction. Base is basically straight and is thinned with one large irregular flake on one side and three or four small irregular flakes on opposite side. Lateral edges heavily ground and base lightly ground. Dimensions are: L, 44.0; Base W, 16.7; Max. W, 23.1; T, 9.4. Wt., 7.4.

Figure 2 (g). *Angostura* basal fragment. Yellowish tan good quality chert. Entire blade is missing. Stem has predominately parallel flaking and base is convex with resharpening flakes from one side. Lateral edges are heavily ground. Dimensions are: L, 34.1; Base W, 16.2; T, 9.1. Wt., 9.0.

Figure 2 (h). *Angostura* basal fragment. Brownish tan good quality flint. One side mostly parallel flaking, other irregular. Base is thinned on one side by one channel flake with subsequent fine retouch. Other side thinned with three short lunate flakes with fine retouch. Lateral edges and base are heavily ground. Dimensions are: L, 21.7; Base W, 15.4; Max. W, 19.0; T, 5.0. Wt., 2.7.

Figure 2 (i). *Angostura* basal fragment. Tan flint. Irregular flaking scars. Base slightly concave and thinned primarily from one side with three or four short irregular flakes. Opposite side has five very small parallel flakes. Lateral edges heavily ground, base not ground. Dimensions are: L, 18.0; Base W, 16.3; Max. W, 19.9; T, 7.0; Basal concavity 1.2. Wt., 3.65.

Figure 2 (j). *Angostura* basal fragment. Mottled reddish purple flint. Irregular flake scars. Lateral edges and base ground. Basal concavity formed by removal of two short lunate flakes from one side only. Dimensions are: L, 21.7; Base W, 11.7; Max. W, 18.3; T, 6.5. Wt., 3.0.

Figure 3 (1). *Plainview* fragment. Brownish tan flint with just the beginning of a very light patina. Each face has basically oblique parallel flaking with flake scars wider than usual along the left side. The right side of each face has mostly irregular flake scars with light retouch along this entire edge. Base is slightly concave and is thinned on one side with one large lunate flake with subsequent retouch. Opposite side is thinned with three short channel flakes with subsequent retouch. Lateral edges and base are lightly ground. Dimensions are: L, 53.5, W, 20.3; Base W, 19.7; Base concavity 1.7; T, 6.5. Wt., 9.9.

Figure 3 (b). *Plainview* fragment. Brownish tan flint. The blade broke after resharpening. Most of the back side of the blade (that side not illustrated) is missing due to heavy thermal fracturing. Flake scars are irregular. Basal thinning is by five irregular flakes from one side and four from the other. Lateral edges and base are heavily ground. Dimensions are: L, 39.1; Base W, 21.6; Max. W, 23.5; T, 6.5; Base concavity 3.3. Wt., 5.3.

Figure 3 (c). *Plainview* fragment. Honey colored flint. Oblique parallel flaking on one face from one edge with irregular flaking from opposite edge. Opposite face

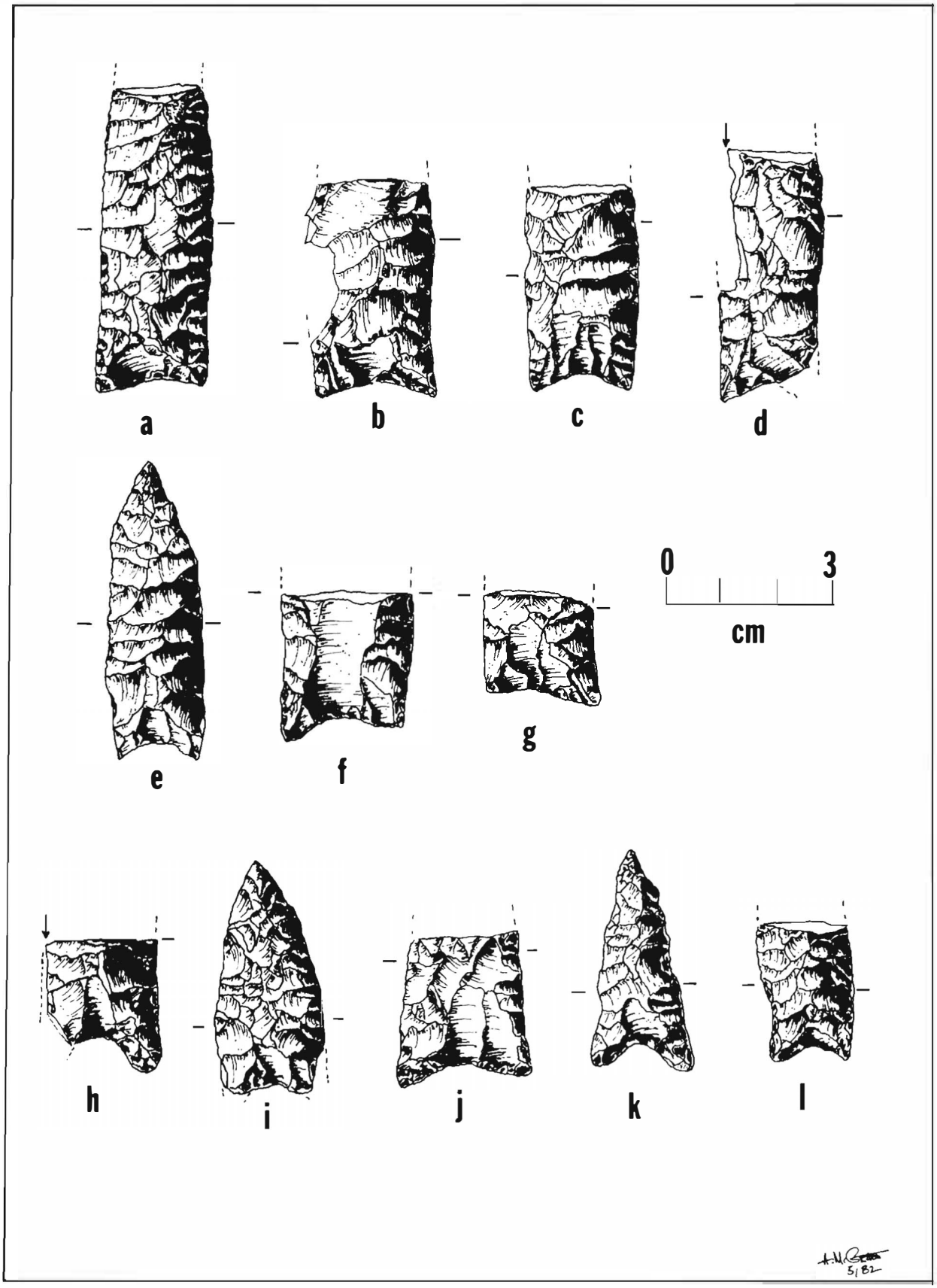


Figure 3. Other Paleo-Indian Points from San Patricio County, Texas: a-g, *Plainview*; h, *Golondrina*; i, unidentified, possibly a miniature *Plainview*; k-l, *Gower*-like points. (Drawings by A. Joachim McGraw.)

has parallel flaking along one edge with irregular flaking along opposite edge. There is light retouch along both edges to each side. Base is concave and is thinned on one side with three channel flakes and on opposite side with two channel flakes. There is light retouch to both sides of the basal concavity. Lateral edges are heavily ground and base lightly ground. Dimensions are: L, 36.4; W, 20.0; Base W, 18.7; T, 6.4, Basal concavity, 3.7. Wt., 6.4.

Figure 3 (d). *Plainview* fragment. Creamy tan flint. Irregular flaking. Blade has been resharpened. Successive burin blows have been struck from the blade fracture and these have removed about 1/2 of that lateral edge. Lateral edges are heavily ground. Dimensions are: L, 44.1; W, 18.5; T, 6.7; Basal concavity 3.1. Wt., 6.8.

Figure 3 (e). *Plainview* - complete. Very light tan flint. Flaking scars are predominately irregular and blade is flaked in such a manner as to form a slight twist. Base is thinned from one side by a single large lunate flake with additional retouch. There is actually very little thinning accomplished, but a comparatively deep concavity has been formed. Lateral edges are lightly ground but base is not. Dimensions are: L, 51.5; Base W, 17.0; Max. W, 19.3; T, 9.0; Basal concavity, 3.6. Wt., 9.45.

Figure 3 (f). *Plainview* basal fragment. Grayish tan flint. One side irregularly flaked with basal thinning by two irregular flakes with retouching across the full arc of the base. Opposite side thinned by one long channel flake that extends beyond the blade fracture. This side also has full basal retouch. One basal ear is missing. Lateral edges and base ground. Dimensions are: L, 26.0; Base W, 21.4; Max. W, 24.2; T, 16.7; Basal concavity, 4.9. Wt., 4.7.

Figure 3 (g). *Plainview* basal fragment. Purplish tan. Predominately irregular flaking. Base is thinned from both sides with four or five irregular flake scars. Lateral edges heavily ground. Base lightly ground. Dimensions are: L, 18.8; Base W, 21.0; Max. W, 21.0; T, 5.9; Basal concavity, 2.4. Wt., 2.7.

Figure 3 (h). *Golondrina*. Light brown good quality flint. Base thinned primarily from one side by one channel flake with subsequent retouch on both sides. Flaking is parallel on one side and irregular on the other. One lateral edge is removed by a burin blow from edge of the blade fracture. Remaining lateral edge and base are heavily ground. Dimensions are: L, 23.0; Base concavity, 4.8. Wt., 3.1.

Figure 3 (i). Unidentified. Brown glossy flint of good quality. It has a waxy feel and vitreous texture indicative of heat treatment. Flake scars are unusually small and irregular. Lateral edges have been ground to the extent of forming a slightly indented stem. There is a shallow basal concavity formed by several small irregular flakes from each side. Both basal ears are broken. It has the appearance of a miniature *Plainview*. Dimensions are: L, 40.7; W, 19.7; T, 6.4. Wt., 5.8.

Figure 3 (j). Unclassified. Light gray flint. Most flake scars are large and irregular. One side of base thinned by two channel flake scars with retouch. Opposite side thinned by one large lunate flake. One edge is slightly battered and appears reworked. Lateral edges and base ground. It has the appearance of a *Plainview*. Dimensions are: L, 21.3; Base W, 14.8; Max. W, 14.8; T, 7.4; Basal concavity 2.4. Wt., 5.9.

Figure 3 (k). *Gower*-like point. Tan flint. Very irregular flaking. Basal concavity has been formed by a single lunate flake removed from one side with subsequent crude retouch to opposite side. Lateral edges are ground. Dimensions are: L, 39.4; Base W, 19.1; T, 6.2; Basal concavity, 4.6. Wt., 3.8.

Figure 3 (1). *Gower*-like point. Tan flint. Irregular flaking. Basal concavity formed by removal of a single lunate flake from one side with subsequent retouch to both sides. Dimensions are: L, 25.5; Base W, 15.4; Max. W, 17.2; T, 17.1; Basal concavity, 2.9. Wt., 3.8.

In addition to the artifacts illustrated, there is one *Plainview* point that has been reworked into a drill. There is one distal portion of a lanceolate projectile point that has the look and feel of Paleo material. It is bi-convex in cross-section, has oblique collateral flaking and a waxy feel and glossy surface as if heat treated. It appears to be a distal portion of an *Angostura*.

There is also a straight base, parallel-side point with light lateral edge and basal smoothing that appears to be a reworked *Plainview*. This specimen has some collateral flaking and the base has been thinned on one side with two channel flakes. The distal tip has been resharpened from both sides, and this resharpening was either unfinished or the tip broke again after the resharpening process.

Three small (L, 33.6; W, 17.6; T, 7.6; Wt., 4.4), (L, 41.7; W, 14.5; T, 7.3; Wt., 4.9), and (L, 16.4; W, 17.2; T, 6.0; Wt., 1.8) comparatively thick points with slightly indented stem and shallow (1.0) basal concavity have pronounced lateral edge and basal smoothing. These have the appearance of *Zavala* points (Hester 1980), but *Zavala* points are not reported as having basal grinding. Their presence is mentioned here to indicate that the Paleo tradition of stem smoothing survived in some areas into much later times. It appears that different areas of central and south Texas during the same time period were making similar things but not necessarily to the same pattern. It may be that this area of south Texas was out of sync with other areas.

The two *Gower*-like points illustrated here have the deeply concave base and basal concavity treatment described by Shafer (1963) and Kelly (1979). The *Gower* characteristic of poor workmanship is also quite evident. The distal edges were examined under 36x magnification and show heavy edge smoothing and polishing with some spalling described by Kelly (1979). The two *Gower*-like points described here more closely resemble the one specimen from Coleto Creek, Goliad County illustrated by Kelly than those from Lake Thunderbird Site, Bastrop County. This may indicate some change in pattern for this point type into the coastal area.

McKinney (1981) maps the sites that have produced *Gower* and *Gower*-like points and they tend to cluster in the transitional zone between the Edwards Plateau and the Gulf Coastal plain. Those nearest the Chiltipin Creek sites are along Coleto Creek in Goliad County. None are reported as far south as those from Chiltipin Creek. If the points illustrated here are truly *Gower*, this will extend their geographical range well into the Texas coastal area.

## CONCLUSIONS

The full range of projectile point types and other artifacts found at two of these sites (41 SP 69, 41 SP 75) suggest they were base camps or possibly hunting stations that were occupied on successive occasions over a reasonably long period of time. The indications of continuity indicate the Paleo camping areas were later occupied by Archaic peoples, causing their materials to become mixed.

While no discrete Paleo-Indian sites are presently known on the Texas coast, it seems probable such sites do exist. There appears to be sufficient evidence available now to support the position that Paleo-Indian peoples were present in this area of the Texas coast.

The illustrations and detailed descriptions provided in this paper add to the growing knowledge and understanding of selected point types and their distribution in south Texas.

ACKNOWLEDGMENTS

I wish to extend my appreciation to A. Joachim McGraw for taking time from a very busy schedule to prepare the illustrations contained in this report.

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# PALEO-INDIAN ARTIFACTS FROM A SITE IN MCMULLEN COUNTY

Tom S. Beasley

## ABSTRACT

A large site in McMullen County, Texas has yielded seven fragmentary Paleo-Indian projectile points during surface collecting activities. This paper describes the site and the Paleo-Indian artifacts it has produced.

## THE SITE

Situated 9.2 miles southwest of the McMullen County (see Figure 1) seat of Tilden, the site is located on a prominent hill at approximately 28°23'45" N and 98°36'45" W on a U. S. Geological Survey Tilden Quadrangle map. Most of the site lies above the 360' contour line, although substantial erosional processes have scattered occupational debris over an area encompassing about five acres. The nearest periennal water source is the Frio River, with a horseshoe bend of this river running some 1.5 miles north of the site.

Scattered-to-thick chaparral, mesquite, cactus, yucca and native grasses typical of the South Texas brush country prodominate in the uplands area where the site is located. Live oak, hackberry, elm and other large trees are found along the river and adjoining flood plain.

Concentrations of flint or chert debitage, sandstone hearthstones, mussel shells and snail shells have been exposed as a result of sheet erosion. Sandstone outcroppings are common in central McMullen County (Hall, *et al*. 1982:4) and many of the sites in this area, including the site under discussion, resemble burned rock middens of central Texas due to accumulations of burned hearthstones.

## THE ARTIFACTS

Diagnostic projectile points from this site range from the Paleo-Indian artifacts described below to Late Prehistoric arrow points. Projectile point types included within the artifact assemblage are as follows:

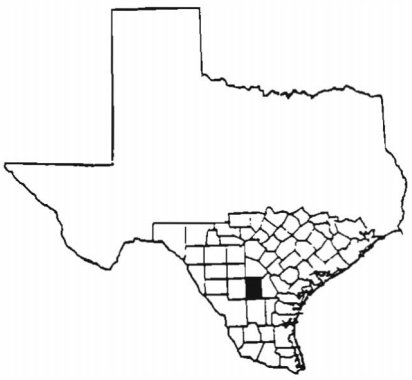

Figure 1. McMullen County, Texas (darkened area).

*Abasolo*
*Angostura*
*Catan*
*Cliffton*
*Darl*
*Desmuke*
*Edgewood*
*Edwards*
*Ensor*
*Fresno*
*Frio*
*Golondrina*
*Matamoros*
*Meserve*
*Pedernales*
*Perdiz*
*Plainview*
*Refugio*
*Tortugas*

Other artifacts recovered from this site include unifacial and bifacial scrapers, Clear Fork gouges, quartzite hammerstones, sandstone grinding stones and abrading stones, cores and core-choppers, miscellaneous bifaces, utilized flakes and trimmed flakes. Based upon the projectile point assemblage, it would appear the Archaic was the period of greatest occupation. The Paleo-Indian period is represented by the seven fragmentary projectile points described below, and perhaps by a number of the Clear Fork gouges (McReynolds 1980). Evidence of Late Prehistoric occupation consists of single specimens of *Edwards*, *Fresno*, *Cliffton* and *Perdiz* arrow points, and two arrow point distal fragments. No ceramics, end scrapers or other diagnostic artifacts generally attributable to the Late Prehistoric have been found in this site.

The seven fragmentary Paleo-Indian projectile points which are the primary focus of this paper are described below, and both faces and a lateral view of each are illustrated in Figure 2 (actual size). All specimens, except g, gg, exhibit basal grinding.

Specimen a, aa - Reddish-brown chert exhibiting fine workmanship with irregular flake pattern; falls within the range descriptive of the *Angostura* dart point (squared base).

Specimen b, bb - White and tan mottled chert; face b exhibits good workmanship with an irregular flake pattern, while face bb has only fair workmanship; falls within the range descriptive of the *Angostura* dart point (rounded base).

Specimen c, cc - Tan chert mottled with beige and brown; both edges are heavily ground, and have been steeply angled as a result of pressure flaking retouch and/or grinding; falls within the range descriptive of the *Plainview* dart point.

Specimen d, dd - Light gray, lustrous chert, possibly heat treated; extremely fine workmanship with irregular flake pattern; falls within lower limits of the range descriptive of the *Meserve* dart point.

Specimen e, ee - Tan and beige mottled chert exhibiting fine workmanship and irregular flake pattern; falls within the range descriptive of the *Golondrina* dart point.

Specimen f, ff - Light brown, lustrous chert, possibly heat treated; good workmanship with irregular flake pattern; falls within the range descriptive of the *Plainview* dart point.

Specimen g, gg - Mottled light and dark gray chert, with flecks of white (exposure to heat probably caused the gray, burned appearance of this specimen); fine workmanship, with perforator tip attributable to rechipping. This specimen is included within the Paleo-Indian inventory based upon quality of workmanship and flake pattern typical of such projectile points.

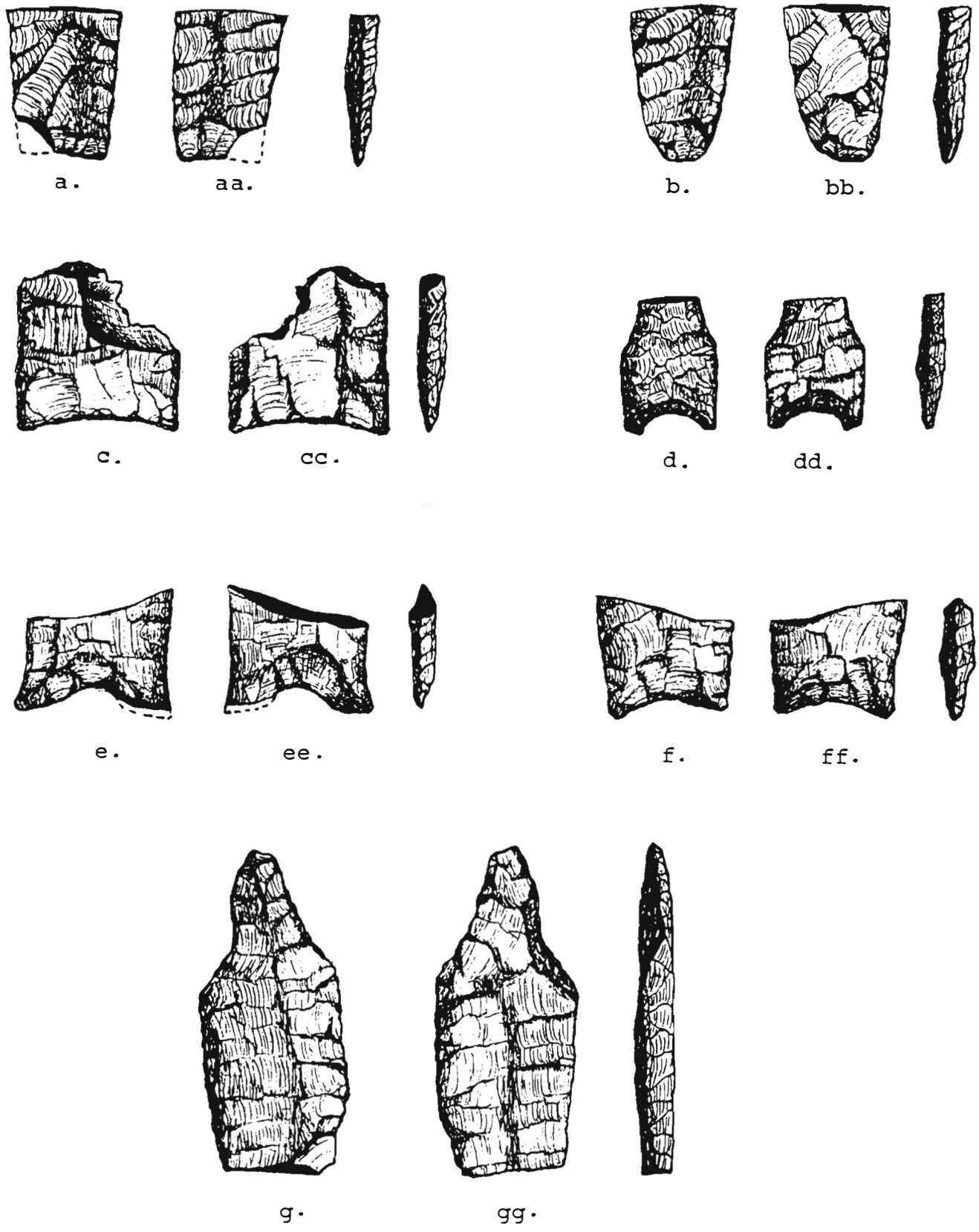


Figure 2. Fragmentary Paleo-Indian Projectile Points (actual size) from a McMullen County Site.

## NEIGHBORING SITES

The author has located eighteen sites in the general vicinity of the subject area. Three of these sites extend over several acres and are situated in elevated or upland locations. The remaining sites consist of rather limited occupation areas, generally less than one-fourth of an acre in size. Precise determination of site boundaries based upon surface evidence is difficult, if not impossible, due to erosional factors. The overwhelming percentage of surface-collected cultural materials from these neighboring sites can be assigned to the Archaic period. Only one Paleo-Indian artifact, a fragmentary *Plainview* dart point, and occasional Late Prehistoric specimens of *Perdiz* and *Scallorn* arrow points have been found by the author in the near vicinity of the site under discussion.

## MCMULLEN AND ADJACENT COUNTIES

The general area of McMullen, LaSalle, Frio, and Atascosa Counties is well known for numerous Paleo-Indian sites (Hester 1968, 1976, 1980; Cooper 1974; Mitchell 1974; Mokry 1976; McReynolds 1979, 1980; Dusek 1980; Valdez *et al*. 1981). Such sites are most often surface sites with artifacts exposed through erosion (Dusek 1980). None of these sites has been fully excavated, but even the present evidence is sufficient to recognize this area of the Frio River drainage system as a major Paleo-Indian occupation zone (McReynolds 1980; Hester 1980).

## SUMMARY

The author has conducted surface collecting and site surveying activities covering more than fifty sites in McMullen County. These activities have produced infrequent, solitary specimens of Paleo-Indian projectile points. The site described above is therefore unique among these sites in yielding multiple Paleo-Indian artifacts. *In situ* discoveries of such artifacts are uncommon in southern Texas, and only through excavation in this site could the limits and extent of Paleo-Indian occupation be determined. In the absence of sub-surface investigation, the documentation of this site and these artifacts nevertheless expands the data pertaining to the Paleo-Indian presence in southern Texas in general, and central McMullen County in particular.

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# ROCKPORT POTTERY OF THE LOWER TEXAS COAST: STYLE VERSUS FUNCTION

Herman A. Smith

## ABSTRACT

This paper examines the function of asphaltum found on Rockport Pottery along the South Texas coast. Experiments with water and oil suggest that asphaltum was probably not an effective waterproofing agent but does facilitate storage of other liquids, such as biological oils.

## INTRODUCTION

According to the first Spanish and Anglo settlers along the Texas coast, the central and lower coasts were inhabited in early historic times by at least five bands or groups of linguistically related Karankawa Indians. The Karankawa have come to be associated with an archaeological complex known as the Rockport Focus, which at present extends from the mouth of the Brazos to Baffin Bay and perhaps farther south to the Rio Grande (Newcomb 1961).*

Six pottery types have been defined for this complex. Three of these, described by Suhm *et al.* (1954), are Rockport Plain, Rockport Black-on-Gray and Rockport Incised, all of which have been linked historically with the Karankawa. The other three types are described by Mounger (1959) and are derived from pottery excavated at the Espíritu Santo Mission at Goliad, Texas, and are attributed to the Aranama Indians, for whom the mission was built. The names assigned to these types are Goliad Plain, Goliad Red-on-Buff and Goliad Black-on-Buff. Goliad ware is known only from this mission site and hence is of little direct interest here. Rockport ware, on the other hand, was produced prehistorically and is found in numerous sites along the southern Texas coast (Campbell 1956, 1961; Story 1968; Hester 1969).

Rockport Plain is characterized by a fine-textured sandy paste, frequently with no recognizable temper. Surface color is predominately dark gray and brown, but light gray, buff, reddish and yellowish brown also occur. Surfaces are smooth, often uneven, and the interior is sometimes striated. Bases tend to be rounded or conical, and many sherds indicate that vessel walls were remarkably thin when viewed in terms of vessel size. Wall thickness varies from 1.5 to 7 mm, with 2 to 4 mm being average. Aside from some notched or crenelated rims, the vessels are plain and vessel shapes seem to be restricted to bowls and jars.

Rockport Incised is distinguished from Rockport Plain by the incision of simple geometric elements in a narrow zone around the rim: horizontal lines, diagonal lines, crossed lines and triangles. Incised sherds are very rare or absent in the lower coastal region and are found infrequently elsewhere.

The focus of the present paper is Rockport Black-on-Gray, distinguished from the previous types by the addition of asphaltum decoration of vessel exteriors and asphaltum lining of some vessel interiors. Black-on-Gray vessels include bowls, jars, globular ollas without necks and bottles with narrow necks, many with asphaltum design elements which include large dots, wavy lines of various widths and occasionally a series of straight or wavy lines extending downward vertically from a band around the lip. Sometimes asphaltum was applied in a thick paste, providing a kind

* [Editor's Note: Other groups along the coast which may have also used Rockport pottery include several different Coahuiltecan bands as well as possibly some Tonkawa. See Hester (1980) and Campbell & Campbell (1981). The diversity of linguistic groups along the coast is not yet fully understood.]

of relief. Infrequently asphaltum is found on the edge of sherds, reflecting an attempt at repairing cracked vessels or mending broken ones (Suhm *et al.* 1954).

Rockport asphaltum-painted pottery is the only prehistoric painted pottery extensively made in the Texas area, and the tradition may have been derived from the Huasteca of eastern Mexico, where Black-on-White and polychrome pottery types enjoy considerable antiquity (Campbell 1961).

Asphaltum itself is still plentiful on the Texas Coast. This naturally occurring tar-like substance, a kind of bitumen, comes from seeps in the ocean floor in the Campeche Bay region of the Mexican Gulf Coast, is carried northward by prevailing southeasterly winds and, as any summer visitor to Padre Island can attest, frequently washes ashore in the form of small sticky patches of "tar." (In all fairness, off-shore drilling by oil companies and evacuation of tanker bilges no doubt contributes some petroleum residue to the beaches as well). Eventually, the more volatile components are evaporated, and hard, brittle nodules of asphaltum that can be collected from the dune areas are indistinguishable from the asphalt produced by modern refineries. These nodules can be quickly reheated to a molten state and used in liquid applications.

That the Karankawa came to use asphaltum as an exterior decoration for pottery is not particularly surprising; that they lined the interiors of their pots is less easy to reconcile, and, in fact, prompted the investigations presently reported.

Some authors have suggested that this asphaltum lining acted as a waterproofing agent for the relatively porous vessel walls (Suhm *et al.* 1954:131; Calhoun 1964: 207), but tests by the author revealed the asphaltum-coated sherds offered no resistance to water penetration. Several Rockport ware fragments with interior coating were placed alongside several plainware sherds from the same site, all averaging 3.5 mm in thickness. Five drops of water were placed on each sherd and allowed to stand. In nine minutes all sherds showed a wet spot on the exterior side. In twelve minutes the water was completely absorbed by all sherds, with or without asphaltum.

In a larger sense, total waterproofing of a water storage vessel in a materially primitive society may not be desirable; the slow evaporation loss refreshingly cools the water with a minimal loss of stored water. The author has seen numerous water ollas in rural homes in Mexico and Central America where the porous ollas are selected for this evaporative cooling feature in areas where refrigeration is unknown.

Why, then, did the Karankawa go to the considerable trouble to "puddle" the interior of so many vessels with asphaltum? The answer may lie in Dyer's (1917) observation that the Atakapan speakers of the upper Texas Coast acquired "the globular or conical oil jugs of the Carankawas" in trade. While the exact nature of the oil is not known, it may have been alligator oil as the Karankawa were known to render alligators for oil which was used as an insect repellant (Newcomb 1961). Would an asphaltum coating be impervious to alligator oil? Unhappily, none was available for testing, but neetsfoot oil, bacon grease and lard were all placed on coated and uncoated Rockport sherds. Even after twenty-four hours, fresh breaks revealed that none of these animal oils had penetrated the asphaltum lining while oil had passed through the uncoated sherds in less than ten minutes. Further tests revealed that oil and water placed on the same coated fragment gave the same results: water passed through quickly, the oil not at all.

Two professional chemists were consulted without a totally satisfactory explanation for this phenomena, but the most appealing hypothesis is that a thin coat of asphalt acts as a kind of molecular screen. That is to say, a very small molecule, such as water, will pass through, whereas a large molecule will not. All animal fats are basically glycerides--very long interconnected chains of atoms that form quite large molecules. A thin coating of asphaltum might be seen as a thin slice of Swiss cheese, in that holes would permit the passage of small objects where a thick slice might not. In this way a thin coat of asphaltum might permit small water molecules to pass through, but a very thick coat would not. Two roofing contractors were consulted. Reputable contractors, according to these informants, apply asphalt to roofs at a temperature of 450°F. This temperature gives the molten asphalt a consistency

such that the thickness of the applied layer is sufficient to repel water. Less ethical roofers will underbid by skimping on material. By heating less asphalt to a greater temperature, say 500° to 600°F, the roof is still completely covered with a layer of asphalt, but the layer is much thinner and can be penetrated by rainwater. A thin coat of asphaltum on the interior of a clay pot would not make the pot waterproof, but liquids comprised of large molecules, such as animal fats, would be held in check. It now seems likely that the Karankawa discovered, probably by accident, that vessels used to melt asphaltum for pottery decoration could later hold oil without penetration or seepage, an attractive feature for storage vessels that must pass from hand to hand occasionally. This previously unreported feature of Rockport ceramics is seen as an explanation for the large numbers of Rockport sherds that bear interior coats of asphaltum.

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## STAA FIELD SCHOOL SCHOLARSHIP PROGRAM FOR 1982

In April 1982, the STAA Board authorized the award of three $100 scholarships for field school attendance. The purpose of this program is to provide support for deserving students and help them obtain needed field experience in southern Texas archaeology. Qualifications included that: (1) the applicant must be in good standing at his or her present institution; (2) the student must be accepted to a field school program; (3) the field school must be held in southern Texas (as defined by STAA); and (4) the applicant must submit an application form including a Statement of Purpose and two references.

Funds for this program were raised through contributions by STAA members (including the now traditional "pass the hat" at the April 1982 quarterly meeting) and some additional money from the normal STAA budget. By supplementing the contributions, the board was able to provide more scholarships this year than in the past, and to provide a higher dollar amount for each award.

The awards committee responsible for selecting this year's recipients included: Dr. R. E. W. Adams, University of Texas at San Antonio (and currently President of the Society for American Archaeology); Dr. Thomas Greaves, Trinity University; Ms. Margaret Greco, UTSA; and Mr. Fred Valdez, Jr., also of UTSA. The committee screened applications from about 20 applicants including participants in field schools with UTSA, Incarnate Word College, and Southwest Texas State University. The three winners and their short essay were as follows:

FRANCES K. MESKILL, a junior at UTSA

> "The summer field course presents an exciting challence to participate in a period of discovery and intensive learning; I eagerly anticipate this invaluable training toward my degree in Anthropology and the opportunity for enrichment on a personal level. This initial exposure to on-site application of archaeological principles will provide a working familiarity with and development of skills regarding technique and methods, a forum for investigations and idea-sharing, and an awareness of the possibilities of interpretation on a local level, with a potential for explanation in a larger context. Crucial to these goals is a commitment to the high standards and purpose of the discipline.
>
> "And, importantly, the alliance perceived through physical contact will broaden our understanding of past human experience, ideas, and lifeways, and, in so doing, the perception of ourselves."

SHEILA PAIS DOS SANTOS RADETSKY, a senior at Southwest Texas State University

> "As a minor in Anthropology, I feel that the Field School will be an invaluable experience to me. I feel that both the knowledge that I can gain and the experience of working on a team with a common goal will be both important and unique. The scholarship will help offset the expense of commuting from Austin which I will be experiencing since the Field School is run on an everyday basis. In the past I have worked as a volunteer on a small site that Dr. B. Thomas Gray ran on the SWTSU campus, and the next time Texas Archaeology was offered, I signed up in the course for credit. I received an "A" after successfully completing the class. My interest has only increased with my exposure to field work and I hope to continue to pursue all aspects of field work."

JEFFREY W. STEFANOFF, a senior at Southwest Texas State University

> "The field school will serve two purposes. The first is to satisfy needed requirements for a degree in Anthropology here at SWTSU. The second is because of my own curiosity. I participated in a dig led by Dr. Thomas Gray last fall on a tributary of the San Marcos River. This first experience was only enough to wet my appetite. Also, after talking with Dr. Garber about the possibility of this being the oldest continually inhabited site in Texas, I became extremely excited.
>
> "Even though I am only an undergraduate, I now realize the importance of practical experience and the impact that this can have in being accepted to graduate school. I plan to make Anthropology my career, not just a course of study. So experience such as this (field school) can only be beneficial.
>
> "Therefore, with this Field School I hope to satisfy many purposes and, with a little luck and a lot of planning, it will not be my last."

The three recipients were presented checks at the July 1982 quarterly meeting of the STAA, which was held at Southwest Texas State University in San Marcos. In addition to a very excellent program on campus, STAA members were able to visit the site of the 1982 SWTSU field school on the golf course at Aquamarina Springs, and see what two of the three recipients had helped accomplish during their field school experience. Dr. James Garber of SWTSU, was director of the SWTSU field school.

Comments from recipients and field school staffs indicate that the support provided through the STAA scholarship program was both needed and most worthwhile. The awards committee believed that there were a number of qualified and deserving applicants who really needed our help. Fred Valdez, Jr., Chairman of the STAA Scholarship Committee, indicated that he wished they had had a fourth scholarship to offer... "it would have been well used."

All STAA members can be proud of the 1982 STAA field school scholarship program--it was most definitely a success. It is one of the most direct and visible ways in which our association supports both current research and the future of archaeology in southern Texas.

We need to start looking forward to the 1983 summer field school season. Anyone wishing to contribute to next year's scholarship fund should feel free to drop a check to the STAA Treasurer (Shirley Van der Veer); please mark such checks specifically as a contribution to the scholarship fund. Remember, such contributions are tax deductible.

AUTHORS

TOM BEASLEY is an attorney by profession and an avocational archaeologist. He has written a number of previous articles on south Texas archaeology for this journal and serves as our area consultant for the Bee County and Kinney County areas. Mr. Beasley resides in Beeville, Texas.

C. K. CHANDLER is an active supporter of archaeology in the state of Texas. He and his late brother-in-law, Dave Espy, were mainstays of the Coastal Bend Archaeological Society for a number of years, and C. K. remains very committed to furthering our knowledge of that area. C. K. was also president of the Houston Archeological Society when he lived in that area (see Editorial in the last issue for a comment on his work there). He is currently the Secretary-Treasurer of the Texas Archeological Society and has helped improve the financial management of that organization. C. K. is also a railroad engineering consultant and resides presently in San Antonio.

THOMAS C. KELLY was chairman of STAA (1975-76) and, in recent years, has been very active in the Colha project in Belize. A retired Air Force Colonel, Tom has done field work in England, Central Texas, New Mexico, as well as Belize. In southern Texas, he has been involved in a number of highly significant research projects, including Camp Bullis and 41 BX 300. In the laboratory, he has been working on lithic wear pattern analysis and microphotography (see his article "*Gower* Projectile Points?" in Vol. 6, No. 2, April 1979). Col. Kelly lives in San Antonio.

HERMAN A SMITH is a doctoral student in anthropology with Southern Methodist University, and is currently working on his dissertation. Herman is also with the Conner Museum of Texas A&I University in Kingsville, Texas. He previously authored an article on a wheeled toy from the Pre-Columbian collection of that museum for this journal (Vol. 6, No. 2, April 1979).

# THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

The Southern Texas Archaeological Association brings together persons interested in the prehistory of south-central and southern Texas. The organization has several major objectives: To further communication among amateur and professional archaeologists working in the region; To develop a coordinated program of site survey and site documentation; To preserve the archaeological record of the region through a concerted effort to reach all persons interested in the prehistory of the region; To initiate problem-oriented research activities which will help us to better understand the prehistoric inhabitants of this area; To conduct emergency surveys or salvage archaeology where it is necessary because of imminent site destruction; To publish a quarterly journal, newsletters, and special publications to meet the needs of the membership To assist those desiring to learn proper archaeological field and laboratory techniques; and To develop a library for members' use of all the published material dealing with southern Texas.

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